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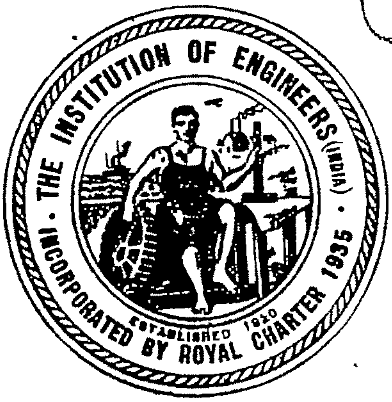
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# INSTITUTION ACTIVITIES, NEWS AND NOTES

Vol. I SEPTEMBER 1951 No. 1

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# ADDRESSES OF CHAIRMEN AT THE ANNUAL GENERAL MEETINGS OF THE LOCAL CENTRES

## Bengal Centre

### Chairman's address by Shri Akshoy Bose, B.E., C.E., M.I.E., at the Annual General Meeting of the Centre on 27th January, 1951

The Chairman referred at the outset to the deaths of Sardar Patel and Shri Aurobindo, as well as of three Corporate members. He welcomed the Chief Guest, H. E. Dr. Kailas Nath Katju, the Governor, and other guests in suitable terms. He thanked the Committee of the Local Centre for having elected him Chairman for the year.

He next dealt with the profession of engineering and the Institution as follows:

'What the profession, in general, needs most is the professional consciousness in its members individually and collectively to ensure social and economic progress. The various branches of engineering in this country have in the remote past devoted themselves to technological advancement of their respective branches of the profession separately. An overall state-recognized body was needed to represent engineers from all branches of the profession, and the Institution of Engineers was formed with a democratic form of organization, which is eminently suitable for the development of the necessary consciousness through the whole profession. The organization is national, sub-divided into twelve local chapters, called Centres, in order that the service of engineers may be distributed in every community, in every state and throughout the nation. In this respect, our Local Centre is unique in comparison with other Centres. Its jurisdiction and scope extends over three Indian States and beyond India to the neighbouring countries of East Pakistan and Burma. In addition, membership from other foreign countries comes under the scope of this Centre, and in the fitness of things the Centre houses the Headquarters of the Institution facilitating closer contact with many leading industries and commercial organizations.

One more word about the Institution—more emphasis has of late been laid and is being increasingly advocated in certain quarters regarding the relationship of the Institution and its affairs with the Government and its business being more a concern of the Government. While it is true that it has a very intimate relationship with Government and looks for Government's patronage, its alliance and healthy collaboration with the leading industries and business are much more important and will remain so until all such important key industries are nationalized.

To even think of placing the affairs of the Institution under Government care and control and making them primarily the concern of Government is a suicidal policy of short-cut and should be checked at the very outset. Such a policy will not only be unjust and unfair to the vast number of members in private firms and organizations, but will make the profession in its fold sacrifice its ethics and independence as it is certain to be ruled, regulated and dictated by outsiders. A policy of blindly following what may have happened in other countries without any consideration of our own environment and peculiarities is most unwanted and unhealthy. The Institution should always function as a technically consultative body to Government, private industries, serving commercial firms, etc. with its research and technical knowledge, but should never lose its distinctiveness by allowing others to shape and dictate its policies and destiny.

From an outsider's point of view, the work and responsibilities of engineers are only technical. But, in fact, these have an ethical aspect too, as it is the engineer who understands and correlates the national forces and resources for the benefit of the public. This ethical value increases in importance as the scope of service spreads, and it is only possible through group and team action through collaboration and pooling of technical knowledge to keep pace with progress. This can only be done through the Institution. At the present time, it is idle to endeavour to secure any representation related to legislation, public bodies, community activities or any other matter of general interest except through this group organization. Thus every engineer should fully recognize this responsibility initially by becoming a member of the Institution and supplement this further by active participation in its manifold activities. He must willingly contribute a share of his own personality and technical ability towards the general welfare of the profession.'

He then dealt with the responsibility of the professional engineer who is in a private firm or in industry, saying that his principle should be to work as an individual and exercise his independent thought, judgment and knowledge which are characteristic of his profession. For the employer, this will be a distinct advantage, as it means better and broad-minded engineers who recognize and fulfil their obligation to truth and the ethics of the profession.

He passed on to the most important problem of dealing with clients, how to approach them and how to satisfy and retain them for the future in the following words:

'Whether you are in private practice or employed in a firm or in employment with the Government or local bodies, clients are there and are essential requisites of your professional life. To those in Government or similar employment, the clients are various committees or directorates and through them the public for whose good and benefit they work. The professional man's object is to help the client to the best of his technical knowledge, art and business aptitude, to secure the best possible value for the money with the materials and resources available. To achieve this with the least possible waste of time and knowledge, he has to thoroughly grasp the scheme and its requirements and then pre-organize the job with a system and programme to minimize cutting, changing and chopping in the course of execution. It is essential to complete every drawing, specification and costing, including details of associated services, to the minutest detail possible at the start. The completeness of drawings and details, etc. and the precision in working these out in this initial stage mean to the executing agency a thorough fore-knowledge of the scheme, and cuts down future headaches, squabbles and disputes, and gives the consulting engineer free scope to concentrate on the very important factor of supervision so essential for quality in production, and also keeps his afternoons free to negotiate and tackle fresh schemes. To achieve this completeness is no mere theoretical mystery. It is the outcome of experience, well-regulated foresight and habit, a frank relationship between the client and the engineer, and the ability and tact of the latter to persuade the former to make up his mind through frank explanations and thereby create and foster mutual confidence. Confidence is essential and to attain this the professional engineer must at the outset realize the clients' requirements and his limitations, both psychological and financial, and be tactful in dealing with these. Technicalities of drawing and specification are not easily understood by the majority of the public, and the cynical minority who pretend to know these are the worse and more difficult variety of clients to deal with. Thus the engineer after reproducing and illustrating everything on paper before the stage of financial commitment must use his ability to make the client see through his eyes every detail of the scheme, so that when the paper pictures attain shape and form the client will be in a position to identify them as three-dimensional facts. The engineer's psychology must be to a degree tolerant and he must not preach his ideas only to be the best. It is the client, who foots the bill and will consume and enjoy the production and as such has a right to assert his ideas, even his whims and fancies, who should be given almost as much play of his fancies as to entitle him to say to his friends that he designed the scheme. We must give our clients the best of our knowledge, guidance and thought in all phases of the scheme bearing in mind that work is primarily creative and functional and not a cosy career or digression.'

He next mentioned the duty of the Institution, being the supreme body for publicizing, to teaching the clientele about the services rendered by the engineer to the society and to placing its members in the correct setting of the new national policy. It is also the duty of the Institution to pursue intensely the policy of persuading the Central and State Governments and public bodies to farm out works to private consultants in a more extensive way by following up the policy laid down in the three momentous resolutions adopted in Patna last year. Simultaneously, a vigorous policy of publicizing the profession in general through press conferences, descriptions and inspections of works is to be adopted to attain its proper status in adequate representation of the profession in legislatures, public bodies and commissions, which has hitherto been most meagre and insignificant compared to the responsibility the profession shares in the development of our culture, civilization and resources.

He next dealt with the liaison between the various branches of the profession and allied professions and how best to collaborate with each section and branch to the best interest. He pointed out the defects in getting services from agents free of charge and emphasized that it is of paramount importance that the alliance should start to function from the very early stage with free interchange of ideas. He also pointed out the paradoxical situation in charging fees on percentage basis in certain cases.

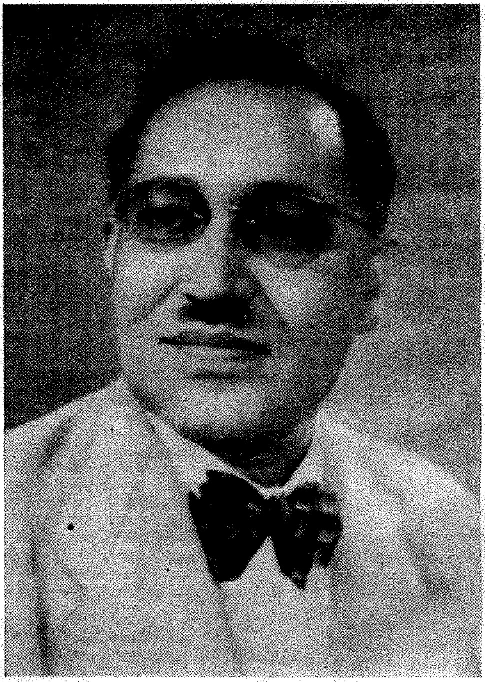
He deplored the lack of efficient data collection and suggested that efforts along with research should be made to collect and document such information through bulletins, information sheets, technical papers, etc. He characterized this as a kind of mobile library to deliver information direct to those who are in need. This is only possible through well-organized group work of zonal research institutes, through exchange and pooling of experience, ideas and data, and publication and circulation of the results.

Finally, he said that it is our duty to produce work permanent in character, modernized through scientific progress with a tolerant attitude towards traditional methods. This is a difficult task, to contribute our share to help the world out of impending cultural crisis. We are the form-givers to our civilization, to the rehabilitation of our ancient culture on firm foundations.

## Bihar Centre

### Chairman's address by Shri Desraj Mehta, O.B.E., M.I.E., I.S.E., at the 4th Annual General Meeting of the Centre on 7th April, 1951

After welcoming Dr. Shri Krishna Sinha, the Chief Minister of the State, who inaugurated the session, and other distinguished visitors and guests, Shri Mehta revealed how in a short period of three years this infant Centre had succeeded in increasing its membership from 90 to over 370 including 40 full and 210 Associate Members; and expressed fervent hopes of this drive for membership showing equally encouraging results in the current year.



Shri Mehta dwelt upon the food problem of Bihar and analyzed the causes of the present day crisis in the following words:

'It is an irony of fate that the State of Bihar, which claims our services and which is endowed by nature with vast natural resources in the shape of land, water and minerals, with its rich alluvial soil which has been the envy of others, should be starving for want of sufficient food. She is passing through an unprecedented crisis in her history. An unfortunate combination of natural calamities has been responsible for the failure of her food crops last year;

and this year again for want of winter rains the poor yield of *rabi* has added to her miseries and our Hon'ble the Minister in charge of Food has already sounded a note of warning that we may be in for worse days ahead. The talk of the moment is food and more food and this in a way is a challenge to the irrigation engineers and the agricultural experts. We must rise to the occasion and devise means and methods not only to tide over her present crisis but to ensure and guarantee the safety of her crops against the vagaries of rains and floods in the future.

The problem, however, is not free from complications, and has its origin in the chronic state of poverty of the country as a whole, and is rooted in the static pattern of her primitive production methods which it is not easy to revolutionize overnight. There are also other serious aspects. The alarming increase in her population is a standing threat to her agricultural economy. In the twenty years between the two world wars, India's population increased by 85 millions. In the State of Bihar it has now been revealed by the 1951 census that the increase in the last twenty years has been 110 lakhs or roughly 5½ lakhs per year. Unless the produce of the country keeps pace with the progressive rate of increase of her population, or a suitable equilibrium between birth and death rates established, it is impossible to expect a lasting policy of her economic betterment.

Another important contributory factor which has not yet received the attention it deserves is the constant and progressive soil erosion that is taking place all over the country—almost comparable to a creeping death for the fertile soil. Although no authentic figures have been compiled, yet according to Sir Archibald Geiki the noted geologist, the Ganga alone washes away every year something like 359 million tons of good fertile soil equivalent to about 900 sq. miles of land one foot deep. It is estimated that more then one-third of our culturable lands are subject to erosion and millions of acres have been lost already. Unless, therefore, steps are taken to arrest this huge annual loss of fertile land, the problem of deficiency in food can never be solved satisfactorily or with any guarantee against its recurrence. The ever-growing population and the constantly shrinking culturable areas would be too formidable a combination for a satisfactory solution. It is, therefore, very necessary to prevent damage to land by erosion. We may have big river valley schemes for conservation of water but they will remain incomplete if they are not followed by some sort of soil conservation programme. I would, therefore, strongly urge for the formation of a Soil Conservation Board which, amongst its functions of collecting data and suggesting remedies for this growing menace, will also help to control and co-ordinate the land utilization survey. The present policy is haphazard. This Board, which should be constituted on the lines of the Bureau of Land Reclamation in the U.S.A., will be the first step towards a scientific study of this grave problem in this country, and its technical assistance to the farmers whose lands are being washed off every year will not only be of immense benefit to them but will ultimately add to our national wealth. Soil conservation is as important as water conservation and deserves serious consideration at the hands of irrigation engineers. It should form an integral part of each and every river development scheme if that scheme has to work successfully. Let Bihar take the lead in this respect.'

He then proceeded to acquaint the members with the substantial contribution made by the Irrigation Department towards the self-sufficiency drive in the State. There were 68 schemes in the proposed Intensive Cultivation Scheme of the State comprising of irrigation, flood protection and drainage of bogged areas. Thirty-five have been completed in the past two years benefiting an area of 1.5 lakh acres and resulting in 18,000 tons of additional food grains. Work on the remaining 33 schemes was being pushed on vigorously, and on their completion before the end of 1951 the Irrigation Department would have contributed something like 90,000 tons of additional food grains out of a total normal deficit of 3.7 lakhs. These schemes, however, were comparatively small schemes meant to give quick results and did not include major projects like Sakri Canal, Tube-wells, D.V.C., Kosi and Gandak Barrage.

He gave a broad outline of the State's activities in the other branches of engineering notably electricity, public health, roads and buildings and referred to the all-round paucity of qualified engineers and subordinates which is responsible for the progress everywhere not being up to the mark. He said

'The Scientific Man-Power Committee of the Government of India have recommended a four-fold increase in the output of all categories of technical personnel if we are to meet our needs in the next four or five years, considering the enormous number and variety of big projects being undertaken. This underlines the deplorable inadequacy of our existing output. It is to be sincerely hoped that quality will not be sacrificed for quantity under any circumstances. Our State has recently set up a first-grade College for Mechanical and Electrical Engineering at Sindri which has been a very welcome addition to our existing technical institutions and has fulfilled a long-felt want. The question of opening evening classes for extending facilities for higher technical education to young apprentices employed in big industrial centres should also receive serious consideration at the hands of the State Government. Our State has also constituted a Technical Personnel Committee with a view to further accelerating the output of scientific technologists and it is hoped it will take notice of this fact and give it a practical shape. Its deliberations and conclusions will be watched with interest by members of this Centre.'

He concluded by saying

'The role of engineers in free and independent India with numerous ambitious plans for river valley developments and industrialization schemes cannot be over-emphasized. The politicians have won us political freedom. We engineers must help to win the economic freedom. Our profession has tremendous responsibilities in leading our country into the full stream of prosperity and well-being. There is hardly a field of development or advancement in the material prosperity of humanity, be it irrigation, agriculture, highways, railways, air transport, telegraphs, telephones, hydro-electric projects, buildings or a hundred and one others, in which engineers are not called upon to play their part. Let us play our part honestly and truthfully and conscientiously and put our shoulders fairly and squarely to the wheel of progress of our Motherland.'

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## Bombay Centre

### Chairman's address by Shri S. M. Kini, B.Sc., B.E., M.Am. S.C.E., M.I.E., at the 29th Annual General Meeting of the Centre on 28th February, 1951

In his Chairman's address to the 29th Annual Session of the Institution of Engineers (India), Bombay Centre, inaugurated by the Hon'ble Shri Morarji R. Desai, Shri S. M. Kini, Chairman of the Centre, dwelt mostly on his own subject of building construction as applied to housing and city development.

After introductory remarks welcoming the Chief Guest, he gave the full progress and development report of the Bombay Centre, and how by interesting talks and promotion of fellowship feelings the membership drive of the Centre was kept up.

He spoke at great length about the procedure for buildings in the city, on Sections 337, 342, 354 and 507 of the Bombay Municipal Act of 1888, and showed how the housing problem was made difficult by the Rent Restriction Act of 1934 and its subsequent amendments, the Bombay Works Restriction Acts and the other control legislations. Even the Town Planning Act of 1915 which was intended to help the development of land in the cities and their suburbs was obsolete and slow in its application.

Shri Kini further added that the services of engineeers must be transferable from one municipality to another, so that the engineer may not be victimized for his boldness in his engineering policies. Generally local bodies were governed by different committees appointed by them, and consisted of members who did not possess even a smattering of engineering knowledge. The municipal engineer with his assistants would be able to give a master plan for his town so that all the corporators and committee members could have a clear mental perspective of their future town and direct their energies and monies for attaining that end.

These master plans and the development of towns and cities would consist of two aspects; first, the improvement of the old city on the correct lines by the eradication of slums, widening of roads, implementation of improvement schemes, and taking obnoxious trades out of the city; and second, the development of suburban areas on the preconceived plan and integrating the same with the old city. A peep into the Master Plan Report of the City of Bombay would show on what lines the other towns and cities might be developed. It was only after such master plans were drawn up that the difficult problems of the city could be tackled with boldness and precision. In the earlier stages it might appear that the proposed steps were imaginary but they would be found to be realistic as the city developed.

Along with the housing, land development, zoning and self-contained community centres, it would be necessary to have roads of adequate width to connect the different areas of the city, Shri Kini emphasized. Segregation of fast and slow moving traffic with proper arrangement for the parking of cars in busy localities and traffic control were all important points.

The greatest headache in the reconstruction of the whole city was the removal of the slums and the blighted areas. Bombay had 86 slums which must be eradicated without further loss of time. The buildings in these slum areas were all old and the rents were also low. By the rental method of valuation the value of the property would be found to be low and the entire slum areas could be acquired and sold out as plots again without involving the municipality into any extra cost.

Concluding, he said that the engineer created the very foundation of material progress in India and contributed largely to the amenities of civilization and the fullness of life. The ideal of service, 'service above self', was followed by every one of them. A peep into the progress and development of the country would bear testimony to that statement and speak eloquently about the engineer who laboured in the silent service of mankind.

## Madhya Pradesh Centre

### Chairman's address by Shri K. R. Minocha, M.Sc., Mem. A.I.E.E., M.I.E., at the 4th Annual General Meeting of the Centre on 24th February, 1951

The Hon'ble Chief Minister, Shri Pandit R. S. Shukla, was the Chief Guest of the Centre. The Hon'ble Minister of Industries and the Hon'ble Minister of P.W.D. were also present.

The Chairman after welcoming the guests and members thanked them for electing him Chairman for the current year. He also expressed appreciation of the spirit of service with which the retiring Chairman, Shri Baxter, and the Honorary Secretary, Shri Mavlankar, had worked.

He traced briefly the history of the Institution of Engineers (India) and its aims and objects. He also appealed that in order that the Institution may function more effectively it was the duty of all qualified engineers to enrol themselves as members and increase the utility of the Institution both to themselves and to the profession.

He said that being associated with electric power development, it was only in the fitness of things that he should deal with this subject in his address. He then gave a brief history of the development of electric power in India, its present status and future possibilities. He quoted statistics of consumption of various countries to indicate the enormous scope that existed for development of power in India. According to the data available the total installed capacity in India was in the neighbourhood of 2 million kW. More than half of this capacity is installed in four large cities, *i.e.*, Bombay, Calcutta, Kanpur and Ahmadabad, which contain less than 1½% of the population of the whole country. Power projects aggregating to a total installed capacity of nearly 1.3 million kW were under execution. It was anticipated that the total installed capacity by 1960 may be nearly 4.8 million kW, subject of course to changing circumstances.

A brief history of the development of power in the State of M.P. was also given. It was pointed out that the total installed capacity in the public supply undertakings in the State prior to the commissioning of the Khaperkheda scheme was only 26,500 kW. With the commissioning of Government schemes of Khaperkheda, Raipur and Chandni Thermal Stations, the total installed capacity in Madhya Pradesh would be very nearly three times this figure.

It was further pointed out that the development of power was only one of the problems before the country. For an all-round development and economic rehabilitation, a well thought-out and coordinated planning was essential. Necessary steps were already taken by the Government of India and the State Governments. The Institution of Engineers offered their wholehearted cooperation and assistance in connection with the work of the M. P. State Planning Board. For the successful planning and execution of all projects, one of the most essential factors was men with integrity of purpose and character. He appealed to the members to set an example by their integrity and spirit of service and thus uphold the ideals for which the Institution stands.

## Madras Centre

### Chairman's address by Shri M. S. Thirumale Iyengar, B.E., M.E. (Hons.), M.I.E., I.S.E., at the 28th Annual General Meeting of the Centre on 27th February, 1951

Delivering the Chairman's address at the 28th Annual Meeting of the Madras Centre of the Institution of Engineers (India) on 27th February, 1951, when the Chief Minister, Shri Kumaraswami Raja, was the Chief Guest, Shri M. S. Thirumale Iyengar, Chief Engineer, Highways and Thungabhadra Project, Madras, mentioned that the membership of the Centre rose by 130 during the year, the total being 674. He stressed the need to maintain such a high quality of membership that not only Government and the public should look up to the Institution for guidance in controversial engineering matters, but the Institution should also function like an university in some respects. Co-operation of Government departments and large engineering firms would greatly help in building up the strength of engineering personnel in the country. He suggested the constitution of an advisory panel of engineers under the aegis of eminent retired engineers, and such a body of consultants would be of immense advantage to pool the knowledge for the construction of large development projects under way. He was of the view that cosmopolitan expansionism would be conducive to the best results.

He next referred to the unique event in January, 1951—the International Engineering Conferences and the Exhibition held in Bombay and New Delhi, and said that they served to bring Indian and other world engineers together. These Conferences were helpful in creating a cosmopolitan outlook in the Indian engineer. He referred to the dam building and engineering research, especially in France, and the determination with which they pursued a policy of maximum production in the face of power cuts, and said that if the Krishna and the Godavari Rivers are developed as river valley projects as a whole, they would produce enormous amounts of power and food that would suffice for a generation to come. And, the success in such undertakings depended mostly upon the methodicity and determination with which the problems are tackled.

He next referred to the engineering courses obtaining in Indian Universities and said that the student should be given facilities to specialize in one or two subjects in the third year of his stay in the college. The primary duty of an engineering college should, therefore, be to give the student an opportunity to get basic knowledge in matters in which he would not have a chance to specialize later. If the engineering colleges turned out people who specialized in one or two branches and possessed basic knowledge in the other branches of engineering, we could expect them to tackle our development projects with confidence.

Referring to the highways system in the Madras State, Shri Thirumale Iyengar said that the water-bound macadam surface which held sway so far is becoming more and more unsuitable for the mixed fast and slow moving traffic that has developed, resulting in heavy and uneconomic maintenance costs. He advocated the introduction of bitumen-treated roads in rainless and waterless areas, and asphaltic concrete in municipal and city areas. Cement concrete pavement, though costly in the initial laying, proved economical in the long run due to its durability. He contrasted the present annual maintenance cost of a water-bound macadam road of Rs. 4,500 a mile with that of Rs. 750 that would be necessary for a 12 ft. wide, 4 in. thick cement concrete road which costs about Rs. 75,000 per mile for making. He was of the view that capitalizing a portion of the annual investments now spent on water-bound macadam renewals and investing the sum on making cement concrete roads would not only be a sound financial policy, but would also be a wise and judicious course for the improvement of roads. Reviewing the financial aspects, Shri Iyengar said that Madras State was spending Rs. 700 lakhs a year on roads other than national highways, against the sum of Rs. 350 lakhs derived from taxes on motor vehicles. It was therefore necessary that the beneficiaries—the private transportation organizations, bus operators, public carrier companies and interested individuals—should come forward and loan money for financing these improvement schemes.

Shri Thirumale Iyengar next referred to the research made in the Madras State Highways Laboratory on low cost roads with stabilized soil for base and for berms in black cotton soil areas and under waterlogged conditions. In this connection, he stressed the need for developing a basic knowledge on 'research.' The use of the stabilized soil technique, which would be most useful in deltaic regions, would result in a saving of Rs. 5,000 to Rs. 10,000 per mile. There were 3,000 miles of such roads requiring improvement, and yet another 2,000 miles of new roads to be formed.

Referring to bridge construction in the highway system, Shri Iyengar emphasized the need for standardizing designs. Economy in the costs of centerings in reinforced cement concrete, which were taking up about 25% of the R.C.C. work, could be effected by a judicious regional planning of schemes to ensure maximum possible reception of centering use. Engineering organizations should keep research units attached to their designing offices and they could be of considerable help to Government departmental organizations in this respect. He preferred the use of concrete in bridge construction to locally available materials in view of the several advantages that the former affords. Referring to the use of pre-stressed concrete in bridge construction, he mentioned that Madras was building a 90 ft.

span pre-stressed concrete highway bridge, which was the first of its kind in India. In the use of the pre-stressed concrete, apart from the greater factor of safety, there is great economy of steel up to 80% and concrete 40%. As regards bridges on village road systems, he pointed out that the policy of giving preference to laying of new village roads and postponing the construction of bridges and culverts was wrong; on the other hand, bridges and culverts should be constructed first and then the roads improved.

Shri Thirumale Iyengar next referred to a few special features on the aspect of localization in the Thungabhadra Project, and plans for the rehabilitation and re-settlement of the inhabitants of areas which would be submerged in the Thungabhadra Dam Reservoir.

Regarding Ramapadasagar, Shri Iyengar mentioned that without decreasing in an appreciable degree the main scope of the project as originally conceived for power and food production, proposals are being revised to reduce costs by the omission of certain costly items like navigation, drum gates, etc. The total cost will be below Rs. 100 crores against the Rs. 130 crores originally estimated.

Shri Thirumale Iyengar concluded his address with an exhortation to the young engineer. He mentioned that the engineering profession today ensures, in a conspicuous way, usefulness, security, happiness and contentment. He quoted Plato's saying that 'Education is a life-long process' in which the student can only make a beginning during his college course. He advised the young engineer to dedicate his life and concentrate all attention and energy, not only on being a successful practical engineer, but also never to cease to be a student; and further one could never become a success, if he is devoid of a humanitarian outlook on life.

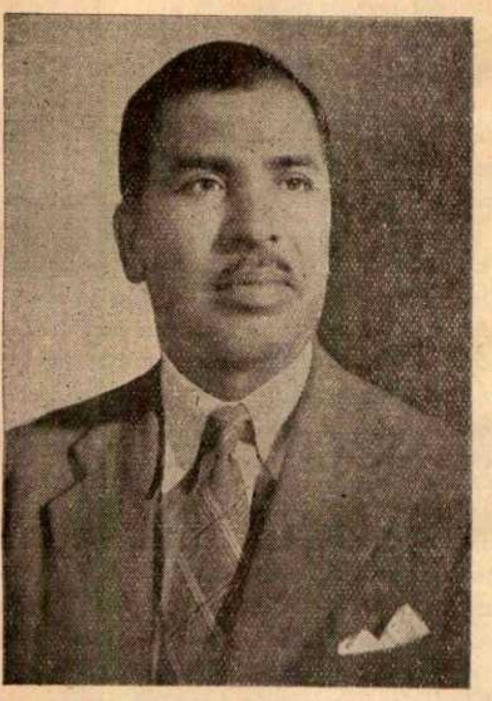
## Mysore Centre

### Chairman's address by Shri M. Hayath, B.E., B.S.E.E., M.I.E., at the Annual General Meeting of the Centre

'I am deeply indebted for the continued confidence the Executive Committee of the Mysore Centre of the Institution of Engineers has placed in me by electing me as the Chairman for a second time. I am conscious of the limitations of my abilities and the enormous responsibility that has been thrown on my shoulders by your kindness. I can only say at this stage that I will strive hard to deserve the confidence you have placed in me by trying to steer the affairs of the Local Centre of the Institution to the best of my ability and to emulate the example of my distinguished predecessors.

During February 1950 when I had the honour of addressing you I had tried my best to express my opinion regarding the duties and responsibilities of the noble profession all of us have chosen. I therefore do not wish to dilate on general principles and privileges such an Institution provides, as only recently we have heard from the newly elected President of the Institution of Engineers an inspiring address and I will only be meekly imitating it if I were to attempt to do so.

It is also customary for a person elected as Chairman to say a few words on the subject with which he is intimately connected with in his profession. Therefore, I have chosen for my address to you a subject which will give the progress of the Electricity Department of the Government of Mysore and the plans that they have in view. I know many of you are familiar with these, but have not seen any comprehensive record thereof on paper, and therefore I am emboldened to inflict upon you this address and crave your indulgence.



As many of you are aware, the Electricity Department of the Government of Mysore started its activities as early as 1897 under the patronage of the then Dewan and far-sighted statesman Vanivilasa Sannidhana Sir K. Seshadri Iyer. The scheme was first serviced for power supply to Kolar Gold Fields in 1902, the earliest large hydro-electric scheme in India. Further, from the records we see that the transmission line that was constructed for power supply to Kolar Gold Fields was the longest that was in existence on commercial service in the world on the day it was switched on. Thus we have been lucky enough to inherit a noble legacy and bold policy of development which was inaugurated by that far-sighted statesman. Even though at the time this was put into commission certain doubts were expressed by several men in position, fortunately and as was expected the results were very satisfactory. People gradually came to understand the benefit of electricity both for domestic and industrial purposes and the demand began to grow gradually but surely.

The history of Sivasamudram Power Station provides a standing example for any electricity undertaking as to how as more electricity is provided more is demanded by the public. Even though it took nearly 40 years for the Sivasamudram Station to develop fully, the indications were that the growth in subsequent years was faster than previously, with the result that there were eight additional installations, bringing the capacity of the generating station from 3,000 to 45,000 kW.

Gradually it was evident that the demand in the State for electricity for domestic and industrial requirements was increasing at a more rapid rate than visualized previously, and it was evident that the capacity of the generating station at Sivasamudram could not be increased further due to the limited quantity of water available in the Cauvery River during summer months. Naturally two propositions presented themselves; one was how best the limited quantity of water made available in the Cauvery Valley could be used to generate more power, and the other was other sources of potential energy had to be investigated to be harnessed as and when required. Surveys around Sivasamudram were conducted, and it was found that in the Shimsha River Valley, where the Shimsha Falls are situated, a site was available for the location of a generating station at a distance of about three miles from Sivasamudram, where if the waters of the Cauvery were to be conducted through appropriate channels and pipes, a head 50% in excess of that available at Sivasamudram was awaiting utilization. The Department immediately took up the question of generating power at this site, and thus in 1940 the generating statino at Shimsha came into existence. As utilization of the Cauvery water at Shimsha involved abandoning the Sivasamudram Station where equipment at considerable cost had been installed, the transfer had inevitably to be made in gradual stages. Therefore, the first stage of development of power at Shimsha was designed for the diversion of 300 cusec. of water and the remaining quantity available in the Cauvery being continued to be utilized at Sivasamudram Station. The design of Shimsha Station has been such as to enable diversion of the total quantity of water from Sivasamudram to Shimsha when the machinery installed at Sivasamudram becomes obsolete and uneconomical.

A survey of load development indicated that the increased production of power at Shimsha with the utilization of limited quantity of water made available in the Cauvery River during summer would not meet the increasing demand. Several sites for generation of additional power were investigated. It was felt that large blocks of additional demand could not be met by harnessing smaller sources at Lakkavalli, Shimsha or Mekadatu. Therefore, the largest source of potential energy, *viz.*, the Sharavathi Valley, was investigated, and it was found that even though the initial capital cost was high, if the generating station capacity was increased to 120,000 kW the cost per kW of the generating capacity would be very low, and the loads at the time indicated that even though the capacity of the station was to be increased to 120,000 kW all the power could be utilized and no power would be left as surplus. However, I must mention that some expressed doubts as to whether there was potential demand to utilize the power to the extent of 120,000 kW from the Jog works. I have given some details later to set their doubts at rest.

I have always been of the opinion that more power is needed by people than could be provided by a community, and I am supported in my conviction by the statement of Mr. Michael W. Straus, United States Commissioner of Reclamation. In his statement in a paper he presented to the World Power Conference in January 1951, he says 'I am not overly impressed by suggestions that some areas are ready for and want power with irrigation while other areas are not advanced to the point of needing and utilizing such power. It is my conviction that all places everywhere need power to lighten their toil. While the demand for power grows directly with the supply of electrical power I wish to report to you without qualification that I know of no place anywhere in any land that has a real surplus of power. I do not expect in my life ever to see or hear of such a land.' At this stage I must also mention that the Government of Mysore have always been alert to the prospective loads with the result that proposals for provision of additional generating capacity have received favourable consideration. May I state that we have been blessed with a long line of benevolent Rulers and far-sighted administrators whose objective has been to improve the lot of the common man, and they have always included electricity as an essential requirement to achieve their objective. We, the people of Mysore, have in the past enjoyed this benefit and let me pray and hope that the same benefit will be continued to be enjoyed by our successors.'

## Punjab Centre

### Chairman's address by Shri Brijmohan Lal, M.I.E., I.S.E., at the 7th Annual General Meeting of the Centre on 19th February, 1951

The Chairman welcomed the Hon'ble Minister for Public Works, Capt. Ranjit Singh, on behalf of the Punjab Centre of the Institution of Engineers and thanked him for kindly consenting to inaugurate its Seventh Annual General Meeting. He also thanked the members of the Local Committee and through them all the members of the Punjab Centre for having elected him Chairman for the next year.

Giving the background of the Punjab Centre he said that when it was formed in 1943 at Lahore it had not been very popular because of the existence of an earlier and more popular body—the Punjab Engineering Congress. But after Partition, as the Punjab Engineering Congress ceased to exist, the Punjab engineers had patronized this Institution and the membership was now steadily increasing every year. With the promise of the Punjab Government to allot the Centre a free plot in the new capital at Chandigarh and with a substantial promised grant, they hoped also to erect a suitable permanent home for the Centre in the near future.

Since the inauguration of the Indian Republic, engineers had played an important role in the development of its natural resources. An event of considerable importance was the holding of several International Engineering Conferences at New Delhi in January 1951 in which nearly 300 foreign and 400 Indian engineers took part and where over 200 technical papers were discussed. Along with these Conferences, an International Engineering Exhibition was also organized on a large scale, the success of which had shown to the world the high organizing and planning capacity of Indian engineers.

In the Punjab itself much had been done to wipe out its initial deficit of 35,000 tons of food grains and make it a surplus State capable of exporting 22 lakh tons of food this year to deficit States. Work on the Bhakra-Nangal project had made steady progress. It had been finally decided to establish the new capital at Chandigarh and four foreign architects were busy planning the city. Several new roads had been constructed by the Building and Roads Department and many buildings for laboratories, jails and hospitals had been built. Thousands of displaced persons had been rehabilitated in cement stabilized houses and mud huts built by the Department. The Bit Ilaque Water Supply Scheme (Lajpat Rai Waterworks) was probably the largest rural water supply scheme in India catering for 35,000 people spread over more than 50 villages.

In spite of this, much remained to be done and there was a shortage of technical personnel; and even the little staff there was could not contribute its best as there were limitations and drawbacks in their systems of functioning which required radical changes. As the eminent American engineer Dr. Trone had pointed out in his report to the Prime Minister, the main defects were the divorce of responsibility from authority and the prevalent rules and regulations which bound down the executive officers in the P.W.D. to petty administrative and financial duties which worked as a brake on speedy execution of works. Closely linked with that was the controversy whether the Chief Engineer should also be the Administrative Secretary for his department. It was impossible for a layman to give any considered opinion on technical matters. A Chief Engineer, by virtue of his training and experience, was much better fitted to advise Government on technical projects than a young Civil Service officer. By taking away the Secretaryship from the Chief Engineer he would be altogether divested of all authority, while the entire responsibility of successful completion of works lay on his shoulders. Though in the Punjab the post of Chief Engineer-Secretary still continued, the recent departure in the administrative set-up for the construction of the new capital was somewhat embarassing.

He then dwelt on the various problems of the Punjab. In his Presidential Address to the Indian Roads Congress 1950, he had stressed that to make the 'Grow More Food Campaign' a real success it must be coupled with a ' Build More All-Weather Roads Campaign', and had suggested that an appreciable share of the large funds that were now being collected from motor and gasoline taxation and some funds from the ' Grow More Food Campaign ' should be deflected towards development of road communication in food producing areas. Better roads and improvement in agricultural and industrial production should go hand-in-hand. Unfortunately in the Punjab due to its slender finances they were far behind the target fixed by the Nagpur Plan. They had only 9,200 miles of roads for a total area of 37,461 sq. miles, *i.e.*, one mile of road per 4 sq. miles, while even Ceylon had three times as much per sq. mile. The main reason for the State Government's inability to provide funds for the construction of roads was the fallacious financial classification of expenditure on construction of roads as non-productive, while as a matter of fact they paid for themselves just as roads in other countries. By taking the total revenue from taxes on vehicles and gasoline alone it could be proved that the roads would yield a 10% return. The indirect gain to the economy of the State from the roads could be viewed from another angle also, *i.e.*, by taking the difference of the costs of carriage of total traffic on metalled and unmetalled roads. By that way too it could be proved that the expenditure on construction of roads was not unproductive as thought by financiers but yielded at least 10% if not more. But even the latest Five Year Development Programme prepared on the directive of the Planning Commission provided for the construction of 800 miles of metalled and 320 miles of unmetalled roads only in the Punjab. That meant it would take 20 to 25 years to reach an ultimate target of one mile per sq. mile. That programme too (which had not yet been approved) fell far too short of their requirements.

Lack of finances was, however, always pleaded for not undertaking the construction of roads so essentially required for the development of the country in every sphere, public health, education, industry and food production. In his Presidential Address to the Indian Roads Congress, he had suggested several ways and means of obtaining revenue for roads, by levying a road cess on land revenue, by realizing betterment values for roadside land, and by ploughing back into the roads some of the profits made by state-owned transport. It was now time that Government had considered this aspect of the problem seriously and found ways and means of financing the construction of new roads to enable the people of the Republic to enjoy the fruits of freedom.

The Punjab was also not blessed with a suitable technical institution on modern lines. The Government was at present running an Engineering College at Roorkee on the premises of the Roorkee University with the courtesy of the Uttar Pradesh Government. But as that temporary set-up could neither last for long nor fulfilled their requirements, it was now proposed to build a college at Chandigarh at the new capital site in university surroundings for imparting education in the three main branches of engineering—civil, mechanical and electrical—to the degree standard. He liked to suggest that in course of time courses in aeronautical and chemical engineering and post-graduate courses for research should also be introduced. Students should also be given instruction in humanistic studies, economics of labour and administration to develop roles in public life that was so essential for the engineering profession.

He went on to say that our Constitution had adopted Hindi in Devanagari script as the official language. The medium of university education too would gradually be changed from English to Hindi. It therefore devolved on the engineers now to produce a suitable vocabulary of all technical words and expressions so that the literature on engineering subjects in Hindi might be produced for teaching in technical institutions. The Institution of Engineers had already given a lead in this matter by having a Hindi Supplement to their *Journal*. Till now there were no engineering books in Hindi—there might be a few in Urdu published by the Osmania University of Hyderabad. He was of the opinion that while forming new words they should make good use of all technical terms that had been locally prevalent amongst the *mistries*. Highly technical terms would, however, have to be derived from Sanskrit. It was suggested that a sub-committee should be formed at each Local Centre of the Institution for compiling a vocabulary of local engineering words and phrases, and all the information so collected should be pooled by a sub-committee appointed by the Institution at Delhi.

Lastly he exhorted the engineers on the high responsbility that devolved on them of leading the country to prosperity through development of its natural resources, land, minerals and water on a scientific basis, exercising utmost economy and keeping always in view their slender financial resources. The country needed all their skill, honesty of purpose and conscientious hard work.

A distinguishing feature of the session was that the Chairman's address was also printed in Hindi and the Chairman delivered the initial and concluding portions of his address in Hindi.

## Travancore—Cochin Centre

### Chairman's address by Shri S. Ramachandra, B.E., A.M. Inst.C.E., M.I.E., at the 4th Annual General Meeting of the Centre on 7th December, 1950

'I do not know how to thank adequately the members of this Centre of the Institution of Engineers for the honour they have done me by electing me as the Chairman of this Centre for the coming year. We are grateful to the Hon'ble the Chief Minister who has graced the proceedings of this Annual Meeting by his presence and we are specially beholden to him for his kindly agreeing to inaugurate today's function and thus encourage us. The Local Centre is still very young, only half the number of those eligible for Corporate Membership having joined so far. In this and other circumstances the Centre needs all the sympathy and encouragement that the Government can give.

Though engineering activity of the State Public Works Department has been great for many years, and the engineers of the State were among the poineers in bridge work with reinforced concrete, we never organized an engineering association or body on the lines that similar organizations have been functioning for many years in Mysore, Madras and Bombay. Let us make good the present opportunity provided by the Institution of Engineers as the medium to bring the engineers together. I appeal to the Government to allow all their engineers to attend the annual meeting of the Travancore-Cochin Centre as on duty. Let them be paid just the out-of-pocket expenses, so that in these hard days even the officer on low salary does not find it beyond his means. Let us have papers read and discussed at these annual meetings, which may extend to two or three days, instead of a formal annual celebration of a few hours which it is at present. May I take this occasion to make a similar request to firms whose engineers are members of this Institution to give facilities to them to attend the annual meetings and read papers of engineering interest.

I suggest three or four engineers from the P.W.D. and a similar number from the Electricity Department be sanctioned to attend future meetings, the selection being made by suitable rotation by the departmental head, and preference being given to those who have a paper accepted for the annual meeting, or to those who are Members of Council or any of the committees of the All-India body.

There is another matter concerning the Local Centre which calls for urgent help from the Government. We do not have a building to locate the Travancore-Cochin Centre. We hold our annual meetings at different places each year, there is no place to locate our office or growing library, and the meetings of the committees and paper meetings are held in different places much to the inconvenience of the members. May I therefore appeal to the Government, on behalf of the Local Centre of the Institution, to sanction a suitable site and a special building grant.

I wish to speak next to those engineers in the Travancore-Cochin area, including those who are our guests to-day, who are not already members of this Institution, and tell them what the Institution can do for each of them. The benefit is all the more to the junior members of the profession who have many years of useful service to the country before them.

It gives a chance to those engaged in important works, on investigation or design, to lay before brother engineers the data collected, the problems met and the solutions proposed. There will be engineers in the Centre having previous experience of such problems, or from academic study or innate intuition, who may be able to throw out valuable suggestions or lines of further work. The value of such discussions will go on increasing when the membership increases and by the edge given to thinking on new and varied problems as experience in these discussions grows. To the junior engineer both the papers and the discussions will be of absorbing interest and value.

I wish to make known to the present student members of the Institution, and those that may be joining, that the University has generously sanctioned the admission of student members to any of the degree classes as casual students, to the extent accommodation is available in the Engineering College, Trivandrum, and thus equip themselves, both in theoretical studies and laboratory and field work, to the requirements of the A. M. I. E. Examination of the Institution. Advantage may be taken of this offer to the fullest extent possible.

Engineering education was confined in this country for many years to suit the requirements of Government departments and it was considered that one who was trained to a lower job was destined for ever to work as an underdog. Things are different in advanced countries of Europe and America, and in the democratic India of today also it should be open to the bright young lad who joins the lower grades to work his way up in the profession. The Institution of Engineers provides the facilities for such up-grading of both technical knowledge and experience and I invite more and more people to come forward and benefit by the scheme. I may here mention for the information of our distinguished guests that not only senior Upper Subordinate officers of the P.W.D. but passed Civil Overseer students and those who take the Diploma Course in Engineering of the Travancore University, are utilizing the chances thus offered of passing the A.M.I.E. Examination.

There is a third category of persons still, employed in engineering works or firms, for whom full facilities to improve their knowledge and prospects are not yet available in our country. They have the minimum educational qualifications, but do not have the time or finance to be 'full time' students. In advanced countries facilities exist in engineering colleges and institutes for evening classes for students of this category, and may it not be possible for our University and Government to consider the proposal to establish such evening classes, with no addition to the equipment in the Engineering College, and with only a small addition to teaching and laboratory staff? As evening classes cannot extend for the same number of hours as in a day college, the course may have to be longer by a year or more, but at the end of the course when the student takes the A.M.I.E. Examination, he will have the additional advantage of a few years' experience in the profession in an engineer's office, or field work, or both.

Allied to engineering education is the subject of engineering research. While pure research may be left to the professors and post-graduate students of the Engineering College, there are problems connected with our projects for which a certain amount of experimental work has to be done for which facilities do not exist in the departments. In such cases it should be the joint endeavour of the departments concerned and the Engineering College to use the equipment in the College for the purpose. The College laboratories on wood testing, and testing of soils and road materials have equipment which, while of use for the regular teaching purposes of the College, can also be made available for experimental work for soil analysis for water supply, earthen dams and storage reservoir schemes. Let us hope that efforts will be made early towards this end.

Before I close this address, I wish to speak a few words to the junior members of the Institution, and I trust that they will listen to it with the indulgence due to a senior member of the profession. To those of you who are in Government services, let me remind you that the service regulations provide leave of various kinds and you should avail of them as much as possible. I know it is the regret of senior members in the services that they allowed much of such leave to lapse doing no good thereby to themselves or to the services. I trust the senior members of the services will appreciate the point of view here expressed and sanction leave when applied for. I do not know if accumulation of leave is allowed in firms or business concerns in which engineers are employed. May I appeal to those in authority there also to sanction the leave, whenever applied for?

I recommend availing such leave not for rest or idleness but for a period of strenuous inspection and visits of works in your branch of engineering or a more specialized branch in which you are interested.

It should be our endeavour to visit works in our branch and line, wherever they may be in progress, so that when a new work in the line is taken up, it will be an improvement even on the work just previously started. Only thus can we not only keep up-to-date in our projects and schemes, but also contribute our mite to place Mother India in the forefront of engineering activities. May it be given to you to make your contribution to every branch of engineering, and may it be given to you to lead the rest of the country in some branches or lines of work.'

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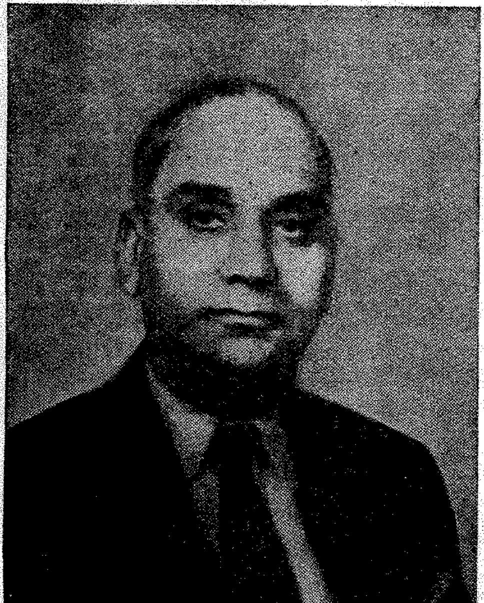
## Uttar Pradesh Centre

### Chairman's address by Shri H. G. Trivedi, A.M.Inst.C.E., M.I.E., at the 30th Annual General Meeting of the Centre on 26th February, 1951



Shri H. G. Trivedi, who was elected Chairman of the U. P. Centre for the ensuing session, first of all thanked the Executive Committee and extended a warm welcome to the Hon'ble Hafiz Mohd. Ibrahim, Minister for Communications, U.P., and all the distinguished audience present on the occasion.

The Chairman in his address mainly dwelt on the importance of public health engineering and the responsibilities of the engineer in contributing to the improvement and maintenance of the public health of the nation. At the outset he made a retrospective survey of the development of environmental hygiene in India and the United Kingdom, which goes to show that although in England the conditions of water supply and drainage prevailing in the 16th and 17th centuries were even worse than what they are in India today, yet the progress made in that country in health works has been marvellously rapid, essentially uniform and highly scientific, and no doubt England can today boast of possessing the most up-to-date health amenities. The reason why India has lagged behind in developing her nation-building institutions has mainly been her long subjugation to foreign rule, which reduced her people to poverty and ignorance by a process of exploitation of her natural resources.

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The Chairman gave a categorical account of the existing conditions and greatly deplored the backwardness of health installations, which may be said to be still in their infancy in this country. He further described the effect of health schemes on the welfare of the community and laid special stress on the preventive rather than curative measures for improving the health of the public. He claimed that pure water supply and proper drainage help in preventing epidemics and eradicating water-borne diseases such as cholera, dysentry and typhoid. He quoted facts and figures to show that in England certain water-borne diseases have been effectively combated by removing the impurities and improving the quality of water, and cholera, enteric fever and typhoid have practically been wiped out from its soil. In India, however, the death rate from these diseases is still quite staggering, although the investigations carried out by the Anti-Epidemic Inquiry Committee show that mortality from these causes in the districts which possess the amenity of piped water supply is comparatively much less than where it does not exist. He suggested that it is necessary to make the public 'health conscious' by means of extensive propaganda and educative campaigns.

He then traced the history of water supply in U.P. from about the close of the 19th century when the first waterworks was inaugurated at Agra, followed by others at different places, and described the sources of water, the type of pumping sets and the motive power used at these waterworks. He referred in detail to the programme of water supply and drainage undertaken in U.P. to implement the recommendations of the Bhore Health Survey and Development Committee, which contemplates the provision of protected water supply to the entire population within 35 years.

Referring to the drainage conditions of the towns in the State, he remarked that the number of towns with even a partial system of underground drainage is less than a dozen, and sewage is discharged directly into the river without any pre-treatment causing river pollution. He however informed the audience that in all drainage schemes now being prepared for urban towns, provision for the proper disposal of sewage on land is being made to avoid pollution of the river water. The utilization of sewage on land for irrigation purposes will help to grow more food by increasing its productivity and fetch a handsome revenue to the local body concerned. In the case of some large towns, the schemes include sewage treatment at the disposal end, and it is proposed to utilize the effluent on land for irrigation and the sludge for the production of gas, which has great commercial potentialities. The full implementation of the Bhore Committee's recommendation, *viz.*, the provision of pure water supply and suitable drainage in Uttar Pradesh will cost something like Rs. 200 crores.

Coming to rural sanitation, the Chairman remarked that 'as far as rural health schemes are concerned not even the fringe of the problem has been touched. Although the villages are the backbone of the country, where about 90% of the population still live, yet there is hardly any sanitation in the villages.' He emphasized that the following measures, which are considered as the minimum requirements for the preservation of good health, should be introduced without any avoidable delay.

1. A decent home with sanitary surroundings to provide the family with shelter against extremes of temperature, sun, wind and rain.

2. Adequate and nourishing foods, milk and other necessities of life.

3. Proper collection and disposal of waste products of the family and the community.

He suggested that *gram panchayats* should really prove an effective instrument in improving the rural sanitation. They should undertake to promote health education among the masses and try to make them 'sanitary-minded'.

Proceeding, the Chairman commented on the urgent need of improving environmental conditions both in rural and urban areas, which is not only necessary for mitigating the incidence of disease but is an essential element for creating a healthy nation. He pointed out that sickness in any form is a cost levied upon society. Good health increases the earning power of its owner and therefore health means wealth. He dwelt on the economic aspect of good health and considered it of vital importance for the financial prosperity of the nation. He, however, expressed the hope that if sustained and rapid progress continues under the development programme launched by the popular Government, the day is not far distant when we shall also be able to drive out the epidemics from our State just as they have been able to do in Europe and America.

The Chairman also drew the attention of Government to the pressing need of granting financial assistance and a suitable plot of land for the library building of the U.P. Centre of the Institution.

In concluding his address, the Chairman said that 'India needs dynamic engineers whose mission as technical ambassadors should not only be to harness natural forces, but also to revolutionize the living standards of the society and carry the message of goodwill to all. He exhorted the members of the profession to devote themselves to the service of the country like true patriots.'

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## DIRECTIVE ON RECOMMENDATIONS FOR CORPORATE MEMBERSHIP AND STUDENTSHIP

### Purpose of the Directive

1. The qualifications for election to Membership, Associate Membership and Studentship are laid down in the 'existing' By-laws Nos. 24, 25 and 29 respectively. The clauses in these by-laws are mandatory and the Council is bound by them. There might, however, be some difference of opinion as to the interpretation which members place on certain phrases in these clauses, such as:

(a) 'Having held a position of *high responsibility*'

(b) 'Responsible for the design and execution of *important* engineering works', and

(c) 'Having had *suitable education and training* in engineering'.

The Council is accordingly issuing this statement *as a guide* to members of Local Centre Committees and Council Members to the way in which these and similar phrases should be interpreted in recommending candidates for election or transfer.

## Full Membership by transfer

2. A candidate for Membership shall hold or have held an engineering position 'of high responsibility'. Further he shall have had *at least 5 years'* experience in a *position of responsibility* on *important* engineering works. It is not possible to lay down conditions more precisely, particularly regarding engineers who are in private practice or appointments. The essential requirements are that the candidate must be employed or have been employed on work the *importance* of which cannot be questioned by the general body of Corporate Members and that his *responsibility* for that work for a period of not less than five years shall be *clear* and definite. When the facts recorded in the candidate's application fail to convince a member that this is so the application should be rejected.

3. Though the minimum age for Membership is 33 years (under revised by-laws 35 years) it is unlikely that the average candidate will fulfil these conditions till he is some years older. Applications from younger candidates should accordingly be examined in regard to fulfilment of these conditions even more carefully.

4. In the revised by-laws, experience as a professor of engineering in an institution which has a regular course of study *approved by the Council* extending over not less than three years leading to a degree recognized by the Council or a responsible position on *important* engineering research is acceptable. In considering the application of these conditions emphasis must be laid on the words in italics. Candidates who have carried out important research work or have read papers of particular merit before the Institution should receive special consideration.

5. It is not the intention that those who are in private employment should be gauged by standards higher or lower than those applied to Government servants.

## Direct full Membership

6. Candidates for direct full Membership are of two classes:

(a) Those who 'have fulfilled the conditions necessary for Associate Membership'—By-law 24 (3-A).

(b) Those who 'have had suitable technical training'—By-law 24 (3-C).

In the past many engineers who were qualified to seek Associate Membership did not do so. As it is clearly in the interests of the profession that all qualified engineers should join the Institution early in their careers the Council takes the view that those who are elected full Members direct late in their careers, must by their work and reputation as engineers, be so distinguished as to be in a position to make an important contribution to the work of the Institution. For the next two or three years it will be necessary to give those who have so far not joined the Institution an opportunity of becoming full Members direct, but the Council considers that from then onwards those who apply for Corporate Membership late in their careers should expect to become Associate Members first, unless it is obvious that in honouring a particular candidate with full Membership the Institution is doing honour to itself.

7. Those who do not qualify for Associate Membership must, by the by-laws, in addition to having held *engineering responsibility* for at least 15 years have risen

to *eminence* in engineering. The use of so selective a word indicates that to qualify for full Membership under this condition special distinction is essential. The Council does not consider that this sub-paragraph of the by-law should be applied to justify the election of a candidate whose engineering career has been an average one.

### Associate Membership

8. By-law 25 lays down that the applicant shall be engaged in the design or construction or operation of engineering works and defines the minimum length of experience which is necessary. The revised by-law is more precise in that it requires ' at least two years in a responsible position as an engineer '.

Corporate Membership of the Institution indicates that the member is engaged in the profession of engineering and that during his career as a professional engineer he will be employed in capacities which involve a degree of *responsibility* and not in positions where his judgment has little scope and his work is continuously directed by others. It is important, therefore, to make certain that a candidate for Associate Membership holds or has held a *responsible* position. In deciding whether his experience as an engineer has been adequate the nature of his experience is more important than the actual number of years. The present by-law gives a minimum of 3 years—the revised by-law 7 years including time spent in undergoing engineering instruction.

9. In considering applications from those who are employed in capacities which may be considered subordinate it will be realized that many engineers whose technical qualifications are adequate are forced by economic conditions to accept such appointments. It is the intention of the Council that such candidates shall not be excluded from Corporate Membership because of the nature of their present appointments alone. Where a candidate can show that he enjoys a measure of responsibility for the engineering work on which he is employed, or where it appears that he has exercised a measure of responsibility for engineering work, he may be considered to fulfil the requirements of By-law 25 (4).

10. An engineer employed as a lecturer, reader, or professor in a non-recognized engineering institution may be considered for Corporate Membership if he can show that he has had the requisite engineering experience before taking up his present appointment. Experience as a teacher or lecturer to overseer or similar classes is not by itself acceptable as ' suitable experience '.

### Studentship

11. A student is one ' who is qualifying himself for the profession of an engineer or being trained in a recognized engineering. institution ' (By-law 29). The revised by-law is more comprehensive, laying down that he is one who ' is qualifying himself for the profession of an engineer as a pupil, apprentice or assistant under agreement under a Corporate Member of the Institution, or is being trained in a recognized engineering institution, or is obtaining training and experience in a manner approved by the Council '.

12. It is not the intention of the Council to approve generally training and experience of a less satisfactory nature than that which is indicated by the phrase 'qualifying himself for the profession of an engineer as a pupil, apprentice or assistant under agreement'. Candidates who are employed as artisans in a workshop, draftsmen or tracers in an ordinary drawing office, mechanics in a motor garage, storekeepers or assistants in a retail shop, and such like employments cannot be considered as 'qualifying for the profession'. In a country as large as India some latitude must necessarily be allowed but care must be taken to recommend for Studentship only those whose present employment is such that the training and experience they are gaining is preparing them in some measure for the profession.

13. A candidate undergoing a course in a non-recognized engineering institution or undergoing a non-recognized course is not eligible for Studentship. Later, if he takes up suitable engineering employment he would become eligible for Studentship.

14. A candidate who applies for Studentship of the Institution is deemed to be qualifying himself for the profession of an engineer for the purpose of By-law 29 if he is certified by two full Members to that effect. This certificate should not be given by Members unless they are satisfied that the candidate is gaining engineering knowledge and technical experience in his employment. Where it appears that in fact the nature of the candidate's employment is such that he cannot be said to be acquiring knowledge, technical experience, and insight into the work of a professional engineer, his application should be rejected.

## Conclusion

15. Finally, it is the intention of the Council to maintain adequate standards for Corporate Membership and Studentship. When, therefore, Members of Council or of the Committees of Local Centres are in doubt about a candidate's qualifications, he should not lightly be given the benefit of any doubt.

## TENTATIVE PROGRAMME OF THE 32ND ANNUAL GENERAL MEETING TO BE HELD IN NEW DELHI IN JANUARY 1952

| | | | |
|---|---|---|---|
| Saturday, 19th January | .. | 1-00 p.m. | Registration of delegates |
| | | 2-30 p.m. | Business meeting, group photograph |
| Sunday, 20th January | .. | 10-30 a.m. | Welcome to delegates, President's Address, address by Chief Guest, etc. |
| | | 2-30 p.m. | Council meeting<br>Local visits |
| | | 4-30 p.m. | At home |
| Monday, 21st January | .. | 10-00 a.m. | Paper meeting |
| | | 2-30 p.m. | Paper meeting |
| | | 8-15 p.m. | Annual dinner |
| Tuesday, 22nd January | .. | 10-00 a.m. | Paper meeting |
| | | 2-00 p.m. | Local visits |
| | | 4-30 p.m. | At home |
| Wednesday, 23rd January | .. | 10-00 a.m. | Paper meeting |
| | | 2-30 p.m. | Local visits |
| Thursday, 24th January | .. | | Leave Delhi for out-station visits in two batches for Bhakra-Nangal or Faridabad* |
| Saturday, 26th January | .. | Morning | Return to Delhi from out-station visits |

* Members who intend to attend the Annual General Meeting are requested to write to the Honorary Secretary, C. I. Centre, about their choice of out-station visit.

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## RAIL CONCESSION TO DELEGATES ATTENDING THE 32ND ANNUAL GENERAL MEETING

Please see form attached at the end of the *Bulletin* and return it in duplicate after filling in to the General Secretary if you are attending the 32nd Annual General Meeting of the Institution to take place in New Delhi in January 1952.

## GRANT OF CASUAL LEAVE FOR GOVERNMENT OFFICERS ATTENDING MEETINGS OF SCIENTIFIC ASSOCIATIONS

The following notification has been issued by the Ministry of Natural Resources and Scientific Research, Government of India, in regard to the grant of casual leave to such officers attending meetings of scientific associations.

No. 74 (4)/50-SR. III
Government of India
Ministry of Natural Resources and
Scientific Research

New Delhi, the 29th July, 1951

**Subject: Association of Scientific Workers of India—Grant of casual leave for attending meetings of scientific associations**

In partial notification of this Department Office Memorandum No. 74 (4)-50-C dated the 29th September, 1950, the undersigned is directed to say that it has since been decided that subject to exigencies of Government business, Government servants who are invitee members, official delegates of the organizations concerned, or have been asked to read papers at a conference may be given facilities to attend meetings organized by scientific associations like the Indian Science Congress Association, the National Institute of Sciences of India, the Institution of Engineers, the Indian Academy of Sciences, Bangalore, and other similar bodies by the grant to them of *special casual* leave to the extent required for attendance at the meetings and for journeys to and from the place of the meeting. It is requested that if there is no objection requests from individual Government servants for leave to attend meetings of scientific associations may be disposed of in the light of this decision.

*Sd/-* D. D. Gupta,
Under-Secretary to the Govt. of India

## PAPERS FROM ASSOCIATE MEMBERS

At their meeting held in Hyderabad on 25th June, 1951, the Council were of the opinion that while it is not possible to lay down a hard and fast rule that every Associate Member should contribute a paper acceptable for inclusion in the *Journal* before he could be considered for transfer to full Membership, they, however, hope that an Associate Member will contribute a technical paper within a reasonable time after his election and before his transfer to full Membership.

## *INDIAN CONCRETE JOURNAL*

The Concrete Association of India have announced that the *Indian Concrete Journal* will be available to Students of the Institution at half the rate of subscription, *i.e.* at Rs. 4-8-0 per annum instead of Rs. 9 per annum.

The *Indian Concrete Journal* has a high standard of contents with contributions from eminent engineers from both in India and outside. It keeps readers well informed in the latest developments in subjects as prestressed and precast concrete constructions, concrete grouted road and soil cement constructions, cement concrete hollow block constructions and many others, besides including notes on project works completed or under construction in India and outside.

The present concession is made to make the *Journal* more easily available to the pockets of the Students of the Institution and thus put its valuable contents at their disposal to assist them in the course of their studies.

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## THE INSTITUTION OF CIVIL ENGINEERS, LONDON
## REVISED SCHEME OF PUBLICATIONS

The Council of the Institution of Civil Engineers have decided to introduce a scheme by which their *Journal* will be issued monthly in three parts under the title of *Proceedings of the Institution of Civil Engineers*, believing that this scheme will enhance the importance of their publications and, at the same time, be advantageous to members and subscribers generally.

The new scheme (which will start in January 1952) is as follows:

**Part I—General**, which will include the Presidential Address, papers and discussions in connection with ordinary meetings, special lectures, certain papers printed with written discussion only, the Annual Report, etc.

**Part II—Engineering Divisions**, which will include all the papers presented at meetings of the Airport, Maritime, Railway, and Road Engineering Divisions, and the oral and written discussions, together with any theoretical papers printed with written discussion only, which are regarded as appropriate to those divisions.

**Part III—Engineering Divisions** which will cover all papers presented and discussed at meetings of the Public Health, Structural and Building, and Works Construction Engineering Divisions, and the oral and written discussions, together with any theoretical papers, printed with written discussion only, which are regarded as appropriate to those divisions.

**Part I** will be issued in the months of January, March, May, July, September and November, and may be purchased by members of our Institution at the reduced charge of 3s. 6d. each (post free) or at £1 per annum (post free).

**Part II** will be issued in the months of February, June and October, and our members may obtain copies at the reduced charge of 3s. 6d. each (post free) or at 10s. per annum (post free).

**Part III** will be issued in the months of April, August and December, and our members may obtain copies at the reduced charge of 3s. 6d. each (post free) or at 10s. per annum (post free).

At present the *Journal* is published in the months of November, December, January, February, March, April, May and October and, therefore, any of our members who subscribe to this publication receive eight numbers for £1. 8s. (post free) or 3s. 6d. per copy (post free).

ALCUTTA

As the new scheme will not start until January 1952, two numbers of the present *Journal* will remain outstanding for 1951, namely, November and December, and it is proposed to issue these to such subscribers at 3s. 6d. each (post free) to complete the year.

Will members interested acquaint one of the sales agents mentioned below of their requirements for 1952, mentioning at the same time their membership of our Institution?

**Agents for the sale of the *Journal***

B. T. Batsford, Ltd.,
15, North Audley Street, London, W.1

William Clowes & Sons, Ltd.,
Little New Street, London, E.C.4

Sir Isaac Pitman & Sons, Ltd.,
The Book Centre, North Circular Road, Neasden, London, N.W.10

E. & F. N. Spon, Ltd.,
22, Henrietta Street, London, W.C.2

Sir Isaac Pitman & Sons, Ltd.,
Little Collins Street, Melbourne, Australia

Sir Isaac Pitman & Sons (Canada), Ltd.,
Pitman House, 381-3, Church Street,
Toronto, Canada

Sir Isaac Pitman & Sons, Ltd.,
27, Becketts Buildings, President Street,
Johannesburg, Transvaal, South Africa

Pitman Publishing Corporation,
2, West 45th Street, New York, U.S.A.

A. H. Wheeler & Co.,
Hornby Road, Bombay; 11, Clive Street, Calcutta;
and 115, Elgin Road, Allahabad, India.

## THE INSTITUTION OF ELECTRICAL ENGINEERS, LONDON

Arrangements have been made for the publication of a new part of the *Proceedings of the Institution of Electrical Engineers,* to be known as Part IV, which will contain papers which by the nature of their subject matter are of greater immediate importance to the engineer-scientist than to the engineer-operator and are thus of interest to only a small number of the general body of readers of Parts I, II and III of the *Proceedings* in which such papers have hitherto appeared. This new part will be published at intervals depending upon the flow of material but in any event not less frequently than once a year. In addition, each paper of this class will be issued separately as an *Institution Monograph* directly it has been set up in type.

The specially reduced subscription rate for members of sister Institutions for Part IV is 7s. 6d. per annum (that is, half the published price). If any of our members subscribe also to Parts I, II and III and wish to take Part IV, the combined subscription for all four parts as from the 1st January, 1952, will be £2. 10. 0d. per annum. Those who have already subscribed for Parts I, II and III for this year can obtain Part IV on payment of the additional amount of 7s. 6d.

With regard to *Institution Monographs*, as these will be in the nature of separate advance copies of the papers that will eventually appear in Part IV, they will be supplied only at the full advertised price of 1s. 3d. each and a separate application to their office is necessary in each case. Announcements of the availability of *Monographs* will be made from time to time in a leaflet which will be enclosed with the parts of the *Proceedings*.

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## INDIAN STANDARDS INSTITUTION PRESS NOTES

The following press notes on standards or draft standards of interest to engineers have recently keen issued by the Indian Standards Institution.

### (1) Standard Code on Safeguards for Textile Machinery

The Textile Building Code Sectional Committee of the Indian Standards Institution has recently issued the draft standard code on safeguards for cotton textile machinery. It is one of the series of codes forming the Textile Building Code which is under preparation by the Sectional Committee.

The draft code prescribes certain regulations for guarding the machinery in a cotton textile mill for the safety and health of the workers, and is intended for adoption by the cotton textile mills as well as the manufacturers of textile machinery and equipment. It covers prime movers, mechanical power transmission equipment, standard machinery guards, machine guarding at point of operation and piling of materials. Various regulations for prevention of accidents which prove fatal or damage limb and health of operatives are in force in India, but it is felt that the formulation of a comprehensive code would facilitate its provisions being made applicable in respect of new cotton textile mills and to the existing mills to the extent considered possible and desirable.

The draft standard code has been issued in circulation for comments in India and abroad.

### (2) Standards for Leclanche Type Cells

Leclanche type dry cells are used in batteries for flash lamps, while Leclanche type inert cells and sack cells are suitable for signalling and telecommunication purposes. The Indian Standard Specification for Dry Cells for Flash Lamps was issued last year, and the specifications for the other two have been laid down in the following two standards recently published by the Indian Standards Institution : (1) Indian Standard Specification for Leclanche Type Inert Cells, IS : 267-1951 ; and (2) Indian Standard Specification for Leclanche Type Sack Cells, IS : 268-1951.

The standards define terms used in them and in industry, and prescribe designations of cells, their overall dimensions, materials of construction and requirements of workmanship and performance. The standards also describe tests, such as initial open-circuit voltage test and life test, to be carried out in specified sequences, and lay down atmospheric conditions of testing and requirements of testing equipment.

The standards are available for sale and copies may be obtained from the Secretary (Administration), Indian Standards Institution.

## RESEARCH—PROBLEMS UNDER INVESTIGATION IN LABORATORIES IN INDIA

The Council have resolved that periodical lists of research problems under investigation in the leading laboratories of India which might be of interest to members may be published in the Bulletin. Efforts were made to gather this information and whatever has been possible to collect is now presented below. Members who are further interested in any particular problem may get fuller details from the organization concerned.

| Organization | Nature of Investigation | Laboratory or Group investigating the Problem |
|---|---|---|
| 1. Central Water and Power Commission (Power Wing), Simla | Study of the causes and effects of electromagnetic and electrostatic induction between power and telecommunication lines and the methods of preventing the effects of such induction | Central Standing Committee for the Coordination of Power and Telecommunication Lines |
| 2. Board of Research on Atomic Energy, New Delhi | High altitude measurement of the different components of cosmic radiation | Tata Institute of Fundamental Research, Bombay |
| | Use of photographic plates for the study of nuclear disintegration | Bose Institute, Calcutta |
| | Setting up of a medium voltage positive ray discharge tube | Bose Institute, Calcutta |
| | Transuranic elements and the nuclear fission of heavy elements | Bose Institute, Calcutta |
| | Investigation on the theory and properties of the meson field | University of Delhi |
| | Stellar structure and its evolution | University of Allahabad |
| | Beta-ray activity of nuclei | Institute of Nuclear Physics, Calcutta |

| Organization | Nature of Investigation | Laboratory or Group investigating the Problem |
|---|---|---|
| | Investigation on the correlation between cosmic ray intensities and meteorological elements and high altitude radiosonde balloon ascents | Physical Research Laboratory, Ahmedabad |
| | Atomic energy project on problems of cell biology | Tata Memorial Hospital, Bombay |
| | Investigation on the mechanism of production of mesons and their properties with Wilson cloud chamber | Presidency College, Calcutta |
| | Investigation on cosmic rays with counter telescope, Wilson chamber and proportional counter | University of Delhi |
| | Investigation on nuclear reactions with (Ra$\chi$+Be) fast neutrons | University of Delhi |
| | A study of the variation of positively and negatively charged mesons by magnetic splitting of the hard components of cosmic radiation | Physical Research Laboratory, Ahmedabad |
| | The effect of shorter wavelengths of million-volt X-rays on the mutation of cancer cells | Chittaranjan Cancer Hospital, Calcutta |
| | Use of radioactive isotopes in clinical investigations and therapy | Chittaranjan Cancer Hospital, Calcutta |
| 3. Indian School of Mines and Applied Geology, Dhanbad | Durability of soda lime-silicate glasses | Department of Chemistry |
| | Studies of ceramic raw materials | Department of Chemistry |
| | Self-glazed clinoenstatite bodies for high frequency insulators | Department of Chemistry |
| | Self-glazed cordierite bodies | Department of Chemistry |
| | New reagents from local resources for the concentration of our poor grade ores by floation process | Department of Metal Mining and Surveying |
| | Developing a new method for analysis of adulterated graphite | Department of Metal Mining and Surveying |

## WORLD POWER CONFERENCE STATISTICAL YEAR-BOOK NO. 5

The Statistical Year-book of the World Power Conference No. 5 has been received by the Institution. This brings the annual statistics of fuel and power production and utilization forward to 1947, and in many cases to 1948, and includes also some additional and revised data on fuel and power resources.

As in previous years of the Year-book, the great majority of the statistics have been specially supplied by the National Committees of the World Power Conference and by official and semi-official organizations in the countries concerned, in accordance with standard definitions (reproduced in the text) which were established, after consultation with experts in many countries, by a Committee of the International Executive Council of the World Power Conference.

The book contains statistics of the resources, production, stocks, imports, exports and consumption of power and power sources in all the countries of the world for which it was possible to obtain information. The power sources included are coals, brown coal, lignite, peat, coke, manufactured fuel other than coke, wood, petroleum, benzoles, alcohols, natural gas, manufactured gas, water power and electricity.

The book is published by the Central Office, World Power Conference, London, and is priced at 30s. net, postage (foreign) 8d. The Institution, in its capacity of the Indian National Committee of the World Power Conference, holds the exclusive selling agency in India for the book, and copies should therefore be ordered through the Institution.

## GIFT OF BOOKS

The Council acknowledge with thanks the gift of 'The Civil Engineer in War' in three volumes, published by the Institution of Civil Engineers, London, from Mr. H. St. J. R. De Lys, M.I.E. The books have been placed in the appropriate section of the Library for reference by members.

The Council's thanks are also due to Dr. C. A. Hart, D. Sc. (Eng.), Ph. D., M.Inst.C.E., F.R.I.C.S., Vice-Chancellor, University of Roorkee, for 60 copies of reprints of his paper, 'Modern Methods of Surveying in Relation to Public Works Engineering and Town Planning', which have been distributed to the Members of Council and the Honorary Secretaries of the Local Centres as desired by Dr. Hart.

## BACK NUMBERS OF *JOURNAL*

Back numbers of the *Journal* from 1924 to 1951 are available for sale from Shri R. G. Bosu, Controller of Stores, East Indian Railway, Calcutta, and those interested may contact Shri Bosu direct.

Some back numbers of the *Journal of the Institution of Mechanical Engineers* from 1939 to 1949 are also available with the same source.

# OBITUARY

## Shri B. R. Kagal

The Council of the Institution learnt with great sorrow of the death of Shri B. R. Kagal, B.E., M.R.San.I., M.T.P.I., M.I.E., Member of Council, on the 29th July, 1951, at Jamshedpur. Shri Kagal had been the Chief Town Administrator of Jamshedpur since 1944. He was born in 1896 and started his career in the B. B. and C. I. Railway, but later set up practice as Consulting Architect. He was appointed Land and Development Officer, New Delhi, in 1930 and was Secretary of the Standing Advisory Committee for the development of the capital for 14 years. He attended the International Housing and Planning Congress in Stockholm in 1933 as a delegate from India and later visited Europe and the U.K. on several occasions to study the latest methods in town planning. Shri Kagal joined the Institution in 1934 and was Chairman of the Bihar Centre of the Institution for four years from 1946-47 to 1949-50. He was, at the time of his death, a Vice-President of the Institution and Vice-President of the Indian National Committee for the World Power Conference. A keen sportsman—he had played in the Bombay Quadrangulars—he will be missed in the many social institutions of which he was an active member.

The Council passed a condolence resolution at their meeting in Madras on 30th July and sent a message of sympathy to Dr. Mrs. Kagal in her great bereavement.

Please tear off here and return to the General Secretary.

## THE INSTITUTION OF ENGINEERS (INDIA)

**8, Gokhale Road, Calcutta 20**

Subject : Rail concession to delegates attending the 32nd Annual General Meeting at New Delhi in January 1952

Ref : Railway Board's letter No. 4663-TC dated 29.11.1950 to the General Secretary, Institution of Engineers (India)

This is to certify that the undernoted is a Member/Associate Member of this Institution and is a *bonafide* delegate travelling from..........................to New Delhi and back for attending the 32nd Annual General Meeting of this Institution.

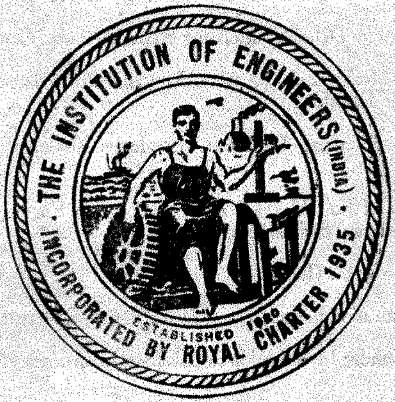
Name of Member/Associate Member..............................

Signature..................................

Certified further that the travelling expenses of this Member/Associate Member for whom railway concession is desired will not be borne by the Central or a State Government.

*General Secretary*

# BULLETIN OF
# THE INSTITUTION
# OF
# ENGINEERS (INDIA)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Vol. 1 No. 2
DECEMBER 1951

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CALCUTTA

# INSTITUTION ACTIVITIES, NEWS AND NOTES

Vol. 1 DECEMBER 1951 No. 2

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# ADDRESSES OF CHAIRMEN AT THE ANNUAL GENERAL MEETINGS OF THE LOCAL CENTRES

## Central India Centre

### Chairman's address by Major-General H. Williams, C.B.E., M.I.E., at the Annual General Meeting of the Centre on 25th February, 1951

Welcoming the Minister of Industry and Commerce, Shri Hare Krishna Mahtab, General Williams said that he was probably constantly reminded of the enormous task, which must devolve to a great extent on the engineers of India, of raising her industry to a level compatible with her importance in the world and adequate to the needs of her people. His acceptance of their invitation was, they would assume, an acknowledgement of the importance of the role they had to play.

The Institution was the only recognized body representative of all categories of professional engineers now practising in the country. Its object was the promotion and advancement of the science, practice and business of engineering in all its branches, and the exacting test of its success was its value to the public at large. He therefore strongly supported the appeal made this year by the President, Shri K. C. Bakhle, to all qualified engineers to support the Institution and to make it really worthy of India's greatness and status. In particular he appealed to engineers to submit sound and interesting technical papers for publication in the *Journal*.

He then dealt with the role of engineers in the defence of India :

'There is first the vast problem of industrialization. Until progress is made in this direction India will be at a disadvantage in that she will have to rely on outside sources for all sorts of essential warlike equipment. Every engineer who by his skill and technical knowledge contributes something to the development of India's industrial potential is contributing directly towards her defence. This process of industrialization will not be a smooth and easy one, and many engineers, particularly those who are entering the profession now, will experience considerable difficulty and frustration before a stage is reached when there is satisfying and profitable work for all.

The realization that he is playing some part, however modest, in the fight against poverty and want in time of peace and towards the greater security of his country in war should spur the engineer to greater effort and determination and be of some consolation to him in times of difficulty.

Again, modern wars make serious demands on the engineer potential of a country and the change from peace to war affects every engineer. Some will join the Corps of Engineers and come face to face with problems which confront the military engineer in war. These problems are of interest now as present conditions have some of the urgency of war about them. In war, time is always short and engineers have seldom as much of it for planning as they require. The drawing office work, the careful weighing of factors, and the meticulous attention to detail which characterise a good engineer's work have all to be done at top speed. Action must go on side by side with planning, and sound judgment as to what risks can be taken and what short-cuts may be made is essential. Then, as now, there will be an acute shortage of resources. In the battle area engineers are in competition with all other arms and services for labour, transport, road space, stores and transportation. It may be thought that money at least will be plentiful, that finance will be forced to relax its control, and that something like an engineer's paradise will exist, but this is not so. Money misdirected in war results in effort and resources wasted. The industrial capacity of every country is limited, and in war it is even more important than in peace that this capacity should be carefully husbanded and resources used only in furtherance of the country's war aims.

In war, events are never static and the engineer's plans must be flexible. He will continually find that many of his most cherished projects are curtailed or come to naught, and he has therefore to cultivate a certain mental toughness and to accept frustration, delay and disappointment with equanimity. He will be called on to advise his commander as to the engineering consequences of the military plans he makes, and this advice must be frank and fearless. He must foresee the engineering requirements of the force, plan prudently and intelligently, and inspire confidence in those with whom he works. He must resist every attempt to dissipate engineer effort and resources. And above all he must be possessed with a strong feeling of the urgency of his work and have the power to communicate his urgency to those who work with him.

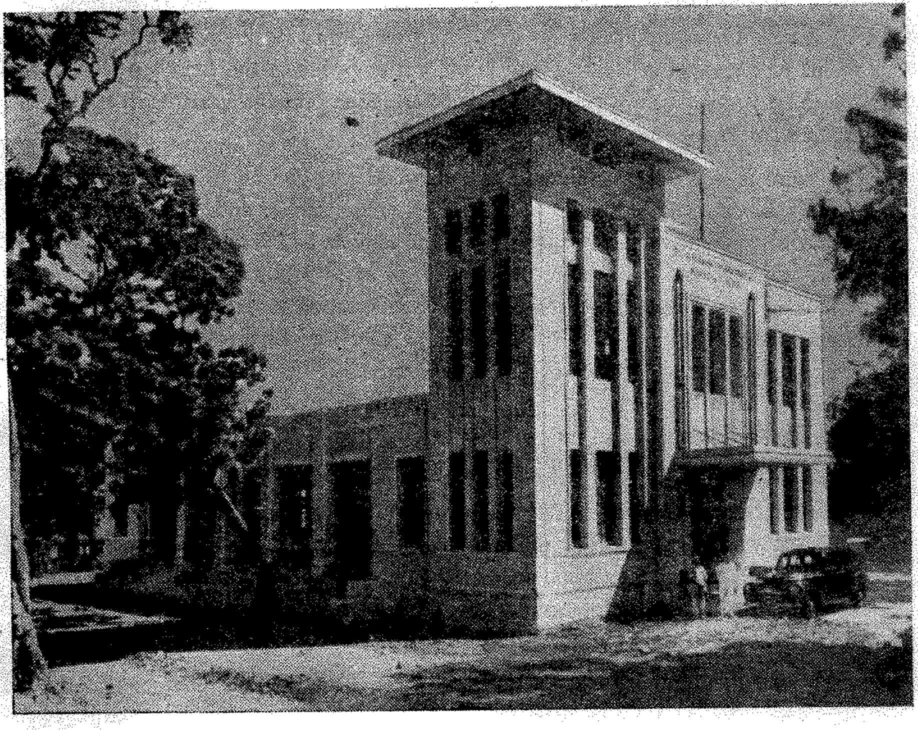
There is need for urgency in India's affairs at the present moment and this war against poverty and want calls for exactly these same qualities from all her engineers whether they be in Government service or outside it, in uniform or in civilian dress.'

Turning to the affairs of the Local Centre, he reminded them that they were still without a suitable home and appealed to all those who were interested in the progress and development of engineering to support wholeheartedly the project for building one. Finally, he claimed for engineers in India a full share of those qualities which men greatly admire—pride of work, devotion to duty, patriotism and selflessness—and assured the Hon'ble Minister that these qualities were unreservedly at the country's service and at the service of those who bore the heavy burden of office.

## MADRAS CENTRE—NEW BUILDING FOR THE CENTRE

The Madras Centre celebrated the opening of a new building for the Centre on July 30, 1951. The opening ceremony was performed by the Hon'ble Shri B. Gopala Reddi, Minister of Finance, and the Builders' Tablet was unveiled by the Hon'ble Shri M. Bhakthavatsalam, Minister of Public Works.

Welcoming the distinguished guests, Shri M. S. Thirumale Iyengar, M.I.E., I.S.E., Chairman of the Centre, said ' We have assembled here today to celebrate an event of great importance and significance. Important no doubt it is, as this Institution Centre gets after a long struggle a habitation of its own, and significant it must be acknowledged to be, as this will in future be a regular meeting place of engineers of all grades to learn, exchange and disseminate engineering knowledge. Not only will this place be used for the periodical meetings for reading of technical papers, but the most important use to which it will be put is the establishment of the nucleus for a library that will, in course of time, develop into a great storehouse of engineering knowledge.'



He then recalled how the Institution was incorporated in Madras on September 13, 1920, under the Indian Companies Act of 1913, with its registered office in the premises of Court Chambers, Ootacamund. He traced the history and growth of the Madras Centre since its formation in December 27, 1922, and the increasing efforts made by the members of the Centre for a home of their own to meet and discuss matters of common interest and of interest to the profession. In August 1950, the Government gave the land on which the new building stands on a 30-year lease at a rental of Rs. 300 per annum. The foundation stone for the building was laid in September 1950 by the Hon'ble Shri M. Bhakthavatsalam, Minister of Public Works. The actual construction of this building was greatly assisted by many building and engineering firms, who generously gave of their time and material to the available funds. Shri Iyengar mentioned these firms by name and expressed the thanks of the Centre for all their help and assistance.

'And a word to the members of the Institution. They can look forward with confidence to a future where opportunities will not be lacking for contributions towards 'directing the great sources of power in nature for the use and convenience of man'. This Institution will play its part in disseminating knowledge for the advancement of engineering science, and assist the engineer in the many problems he has to face by supplying him with the latest information on developments in engineering research and practice.

But there is one important point that I should like you all to remember. The Institution's Charter embraces all branches of engineering and has, amongst its members, duly qualified engineers, some of them famous all over India. The Institution today is in the unique position to give a lead in all professional matters referred to it. It therefore behoves the members of the Institution to prescribe and maintain engineering standards. It also devolves on us to safeguard its dignity, its honour and its prestige by a strict observance of and adherence to the high ethical codes or principles of professional conduct in connection with the mutual relations of the members as professional men and as also *vis-a-vis* our employers.'

Shri Iyengar then requested the Hon'ble the Minister of Finance to declare open the building 'that will afford the Madras Centre of the Institution of Engineers (India) the opportunity of engaging itself in the sacred task of directing the advancement of engineering research and education in this part of the country, which has provided engineers who have been the pioneers of vast irrigation projects and on whom rests a great responsibility to shape and mould young men to shoulder the burden now and in the near future in ever-increasing measure.'

After the building was declared open by the Hon'ble Shri Gopala Reddi, Shri Iyengar requested the Hon'ble Shri Bhakthavatsalam to unveil a tablet to the builders who had assisted in the construction of the building.

Unveiling the tablet, Shri Bhakthavatsalam commended the idea of putting up a tablet inscribing the names of the builders who had helped in the construction of 'this temple of engineering research', and expressed the hope that this mark of appreciation of their service would stimulate in all those concerned an interest to do their very best in contributing to the happiness and prosperity of the people.

The Hon'ble Shri Gopala Reddi, addressing the gathering, said that engineers should keep in touch with the latest trends in engineering science and he, therefore, welcomed the opening of the new building which would help them to keep abreast of of the researches conducted in various parts of the world. In this connection he commended the action of the Madras University in instituting recenty a post-graduate course in engineering.

Shri Gopala Reddi said that without engineers there was no development and, as Finance Minister, he hoped to get money for the State only through the efforts of engineers who were carrying out the several irrigation and hydro-electric projects. That was why even when 'astronomical figures' were given in their estimates, he did not stand in the way of the Public Works Department getting through their schemes, because he knew he would get a decent return for the investment. He expressed the hope that agricultural engineering would hereafter come to occupy a permanent place in their scheme of things. He also wanted the Public Works Department to be a creative department and not merely a maintenance department as in the past.

Appealing to the engineers to devise ways and means for bringing down expenses and to 'couple efficiency with economy', Shri Gopala Reddi said that unless this was done in a poor country like India, it would take a long time before they could provide each village with a decent school and a modern dispensary. Madras engineers had earned praise in the recent Delhi exhibition and he wanted them to improve upon that reputation. The five-year plan of the National Planning Commission should be implemented and completed well before the five-year period, and engineers would be responsible for handling a lion's share of the Rs. 137 crores allotted to Madras. Shri Gopala Reddi concluded, 'We are looking forward to the patriotic work of engineers to implement the plan. You do good work and we will be able to win the elections '.

## HOTEL ACCOMMODATION FOR DELEGATES ATTENDING THE 32ND ANNUAL GENERAL MEETING

The Chairman and Committee Members of the Central India Centre earnestly hope that members will gather in strength for the 32nd Annual General Meeting to be held in New Delhi between January 19-25, 1952. Every possible effort is being made to make the Meeting both useful and enjoyable.

Hotel accommodation to suit various tastes and pockets for about 160 members will be arranged, provided they intimate their exact requirements to Shri T. R. Mehandru, M.I.E., Honorary Secretary, Institution of Engineers (India), Central India Centre, at 9, Marina Hotel, New Delhi, immediately on receipt of this Bulletin. Accommodation will be reserved strictly in order of requests received.

The President of India is expected to inaugurate the session.

## THE INSTITUTION OF MECHANICAL ENGINEERS, LONDON PROCEEDINGS OF GENERAL DISCUSSION ON HEAT TRANSFER

The Conference for a General Discussion on Heat Transfer arranged jointly by the Institution of Mechanical Engineers and the American Society of Mechanical Engineers in cooperation with a large number of kindred societies in Britain, the British Commonwealth and Europe, was held at London on September 11-13, and was continued at Atlantic City, New Jersey, U.S.A., in November. Ninety-three papers were presented dealing with developments in the mechanism of transference of heat and in the design of apparatus relating thereto, and the subject matter for consideration was divided into five main group headings covering the field of discussion as follows :

(1) Heat transfer with change of state ;

(2) Heat transfer between fluids and surfaces ;

(3) Conduction in solids and fluids ;

(4) Radiation, instrumentation, measurement techniques, and analogies ; and

(5) Special problems such as heat transfer in turbine blade cooling, in liquid metals, in gas turbines, and in piston engines, the mercury boiler, etc.

The bound volume of the *Proceedings* of the Conference (including discussions in London and in Atlantic City) will form a comprehensive and up-to-date treatise on the developments which have taken place during the past ten years within the field of heat transfer covered by the papers. As heat transfer is of universal importance these *Proceedings* should be of value to interested parties in all branches of science and industry and to engineers in particular. Copies may be ordered at £2.5s. each, and are expected to be ready early next year. An application form may be obtained from the Secretary of our Institution. When ordering these *Proceedings* the application form should be completed and returned to the Secretary (accompanied by the appropriate remittance) and should be received at the head office not later than January 15, 1951.

## THE INSTITUTION OF ELECTRICAL ENGINEERS, LONDON TELEVISION CONVENTION, APRIL 1952

The Committee of the Radio Section, acting on behalf of the Council of the Institution of Electrical Engineers, are arranging a Convention to be known as 'The British Contribution to Television' to be held in London from April 28-May 3, 1952, and they cordially invite their members to attend.

The Convention will be organized in nine sessions covering the complete field of television. Each session will be devoted to the presentation and discussion of technical papers, and will be supported by demonstrations where applicable. Visits of inspection to organizations concerned with every aspect of television will be included in the week's programme.

The sessions into which the Convention will be divided are as follows :

Programme origination
Point-to-point transmission
Broadcasting stations
Propagation
Receiving equipment (2 sessions)
Non-broadcasting applications
System aspects
together with an historical paper and a broad survey paper to act as an introduction to the whole Convention

It is expected that proofs of all papers will be available in advance. A special issue of the *Proceeding of the Institution of Electrical Engineers* will be published containing all the proceedings of the Convention.

Full particulars and a form of application for registration of those members of the Institution of Electrical Engineers wishing to attend the Convention, will be issued shortly to all the regular recipients of Part III (Radio and Communication Engineering) of the *Proceedings of the Institution of Electrical Engineers.* Members who do not subscribe to this publication and who wish to take advantage of this invitation should notify the Secretary of our Institution so that arrangements can be made for the supply of registration forms.

## INTERNATIONAL SOCIETY OF SOIL MECHANICS AND FOUNDATION ENGINEERING—THIRD INTERNATIONAL CONFERENCE, SWITZERLAND, 1953

The Third International Conference of Soil Mechanics and Foundation Engineering will be held in Switzerland in 1953. The Swiss National Committee now announce that the Conference is being tentatively planned to take place between August 16-26, 1953, with meetings in Zurich and Lausanne and with a four-day trip between the meeting places. Bulletin No. 1 on the Conference has been issued and contains general informatin regarding the Conference. It includes a statement to say that the definite dates for the Conference are expected to be given in Bulletin No. 2.

The Second International Conference at Rotterdam in the Netherlands in 1948 gave a broad outline of developments in Soil Mechanics and Foundation Engineering during the critical period between 1936 and 1948. It is the aim of the Third Conference to follow the lead of the past two Conferences in encouraging coordination in research programmes and other engineering and scientific problems of the many countries represented, in advancing international relations, and in facilitating personal contact between the members of the different delegations.

The main participants of the Conference will be the Members of the National Committees in good standing with the International Society of Soil Mechanics and Foundation Engineering. A cordial welcome is also extended to other engineers or groups of engineers who are active in Soil Mechanics and Foundation Engineering or related fields. Such engineers may register as guest participants.

The National Committee for India, who may be addressed by those of our interested members for further particulars of the Third Conference, is the Indian National Society on Soil Mechanics and Foundation Engineering, Kennedy House, Simla.

## THE INSTITUTION OF SURVEYORS (INDIA)

The Council extend their congratulations to Brigadier K. B. Rai, B.Sc. (Eng.), M.I.S. (Ind.), M.I.E., Member of Council, who has been elected President of the Institution of Surveyors (India) for the year 1951-52.

# INDIAN STANDARDS INSTITUTION PRESS NOTES

The following press notes on standards, draft standards, etc. of interest to engineers have recently been issued by the Indian Standards Institution.

## (1) Preservation of Timber

There is an acute shortage of materials of construction in India. With inadequate supplies of naturally durable timbers, like *sal* and teak, it is imperative to augment the present supplies and also to conserve resources by adopting proper methods of preservative treatment, which would not only prolong the life of timber in service but also make possible the use of less durable species. Effective protection against the various wood-destroying agencies (fungi, termites, borers and marine organisms) can be ensured only if correct methods of treatment are adopted.

The draft code of practice for preservation of timber formulated by the Timber Products Sectional Committee of the Indian Standards Institution gives types of preservatives such as the oil type and water soluble type, their brief descriptions, the types of treatment such as surface application and soaking, and choice of treatment for various timbers for a number of uses.

The draft code includes a table and three appendices. The table gives the process of treatment and the recommended preservative for timbers used for each of the five specified different purposes. Of the three appendices, one gives names of timbers under five heads, such as very durable, durable, etc., classified according to their natural durability ; in the other, timber has been listed in five groups according to its amenability to preservative treatment, and the methods of determining penetration of preservatives are prescribed in the third appendix.

The draft code has been issued in circulation for comments and review to interested parties in India and abroad.

## (2) Non-ferrous Metals Products

A number of basic non-ferrous metals such as lead and brass, and zinc alloys, are extensively used in building and engineering trades and for general purposes. As standardization of products of these metals is essential for industrial progress, the Basic Non-Ferrous Metals Sectional Committee has recently issued three draft Indian standard specifications for (1) Lead sheets for general purposes ; (2) Rolled brass plate, sheet, strip and foil ; and (3) Lead pipes for general plumbing purposes, and a draft Indian standard method of chemical analysis of slab zinc and zinc-base alloys.

The three draft specifications prescribe chemical composition of the materials, their dimensions and tolerance, and tests. The specification for lead pipes does not cover pipes for chemical purposes. In a series of tables, weights of lead pipes are specified for different purposes such as for laying underground and for cold and hot water distribution. The draft standard method of chemical analysis covers methods for sampling and determination of zinc, sulphur, arsenic, iron, lead, bismuth, copper, cadmium, nickel and tin in slab zinc (spelter), and determination of aluminium, copper, manganese and iron in zinc-base alloys.

The draft standards have been issued in circulation for comments in India and abroad.

### (3) Standardization of Electrical Fittings

Among the common wiring accessories indispensable in the electrification of buildings are ceiling roses, wall plugs and sockets. Of late these articles have begun to be manufactured on a fairly large scale in the country and the need has been felt for laying down standards for them. The Electrical Accessories Sectional Committee of the Indian Standards Institution has, therefore, formulated draft Indian standard specifications for two-and three-terminal ceiling roses and reversible type two-pin wall plugs and sockets.

The draft standards specify materials to be used in the manufacture of component parts of these wiring accessories, give constructional details, and lay down a number of tests. For plugs and sockets, four sizes from 2 to 30 amp. are prescribed along with the dimensions of their various parts and tolerances on them.

The draft standards have been issued in circulation for comments in India and abroad.

### (4) Electric Lamps

Electric lamps are manufactured on a large scale in India and their consumption is growing with increasing availability of electricity from existing and new power supply undertakings. The Electrical Accessories Sectional Committee of the Indian Standards Institution has, therefore, prepared the draft Indian standard specification for tungsten filament general service electric lamps.

The draft standard prescribes the mechanical and physical requirements in respect of the bulb, dimensions, cap, solder and marking, as well as the requirements of initial rating (separately for single coil and coiled coil lamps), and of life performance, with which the lamps should comply. The provisions in regard to testing include selection of lamps for and conditions of test.

The draft standard has been issued in circulation for review and comments to interested parties in India and abroad.

### (5) Domestic Electrical Appliances

Electric power facilities are steadily increasing in India, and with them the use of domestic electrical appliances. A growing need has, therefore, been felt for laying down standards prescribing the minimum safety and performance requirements for these appliances. The Electrical Accessories Sectional Committee of the Indian Standards Institution has, accordingly, formulated draft standard specifications for four such electrical appliances, *viz.*, portable immersion heaters, kettles, radiators, irons and boiling plates.

The four draft standards define terms used in them ; prescribe requirements of materials, construction and workmanship employed in the manufacture of the appliances ; lay down a number of tests such as insulation resistance test and earthing test ; specify method of sampling for tests and give particulars of information like the name of the manufacturer, catalogue number or other distinguishing mark, operating voltage, etc. to be marked on each appliance.

The draft standards have been issued in wide circulation for comments to interested parties in India and abroad.

### (6) Standardization and Educational Institutions

Progress in implementing standards, which form the basis of industrial efficiency, is determined by the cooperation of producers, the demands of consumers including Governments, and the advice of technologists. While standardization has played a fundamental role in the rapid development of industry in the more industrially advanced countries, it is yet to find that place in the industrial structure of this country.

Over the period of the last few years, the Indian Standards Institution has succeeded in enlisting the active support of industries and Government departments ; and it is through their help, cooperation and participation that Indian standards are formulated. Since, however, it is on the advice and professional ability of the technicians that the progressive industrial development of a country and its resources ultimately depends, it is of vital consequence that the rising generation of technical personnel is made standards-conscious. The recent decision of a Special Committee of the Association of Principals of Technical Institutions (India) to recommend inclusion of the subject of standardization in the regular curriculum of technical institutions is, therefore, most welcome.

In order to assist the educational institutions to further the cause of standardization, the Indian Standards Institution has decided to supply all its standards to educational institutions at a cash discount of 40%. It is hoped that this concession will be welcomed in educational circles, and enable them to procure Indian Standards with greater ease for educational purposes and class-room instructions.

## RESEARCH—PROBLEMS UNDER INVESTIGATION IN LABORATORIES IN INDIA

Further to the list published under the above head on pages 32-33 of the Bulletin for September (Vol. I, No. I), problems under investigation at the Central Water and Power Commission Research Stations at Poona and Hirakud are given below :

| Organization | Nature of Investigation | Laboratory or Group investigating the Problem |
|---|---|---|
| 1. Central Water and Power Commission, New Delhi | Scale ratios of the Cochin Harbour model for reproducing silting | Research Station, Poona |
| | Scour below central sluices of Mahanadi Anicut at Jobra | do. |
| | The Katjuri River at Khannagar—prevention of damage to the banks at Khannagar caused by change of course of the river to the left | do. |
| | Training the River Kuakhai at the road bridge near Balianta | do. |

| Organization | Nature of Investigation | Laboratory or Group investigating the Problem |
|---|---|---|
| | Prevention of damage to Surat Waterworks on the Tapti River | do. |
| | Training the River Narbada at Broach to prevent its swaying to south abutment of the road and railway bridge | do. |
| | Ganga River model of the proposed combined road and rail bridge at Mokameh | do. |
| | Road bridge across the Gautami-Godavari Rivers at Alamuru, Madras | do. |
| | Distribution of waters between two branches of the Bhadar River, District Ahmedabad, Bombay State | do. |
| | Vibration of dams—their free periods | do. |
| | Development of experimental methods of stress analysis by photo-elastic methods—analysis of arches by Begg's deformeter | do. |
| | Mahi Canal Project—experiments to evolve a suitable design of an overflow weir with apron protections for passing a maximum discharge of 1,110,000 cusec.; and testing of alternative sites best suited for sand exclusion | do. |
| | Geophysical investigations Mahi pick-up weir site—selection of an alternative site based on horizontal magnetometer survey and electrical soundings | do. |
| | Friction forces in wet sands with respect to size and depth of submergence | do. |
| | Hirakud Dam sluices model to eliminate sub-atmospheric pressures inside the sluiceways designed to throw the jet away from the dam | do. |
| | Hirakud Dam sluices model 2 for study of dispersion and interference of jet from cavitation-free upturned sluices | do. |

| Organization | Nature of Investigation | Laboratory or Group investigating the Problem |
|---|---|---|
| | Development of three-dimensional relaxation process for a systematic approach to pressure distribution inside curved sluice gates | do. |
| | Remodelling Dimna Nala overflow weir spillway for safely passing estimated maximum flood discharge of 40,000 cusec. | do. |
| | Systematic pressure computations by two-dimensional relaxation process in relation to a high coefficient weir | do. |
| | Design of a chute spillway for Dharma Reservoir, Bombay | do. |
| | Dissipation of energy below the proposed Vaitarna Dam spillway | do. |
| | Limitation of volute siphons | do. |
| | Hirebhasgar siphon model experiments for making the siphon function safely by alteration of outlets | do. |
| | Sand exclusion from Ye-U Canal taking off at the Kabo Headworks across the Mu River, Union of Burma | do. |
| | Design for canal falls—comparative study of (a) flumed baffle fall design, (b) flumed straight glacis type design, and (c) flumed vertical fall design, for various discharges and depths | do. |
| | Accurate estimation of a catchment's mean rainfall data of the Damodar basin | do. |
| | Run-off estimate by the Khosla formula—verification by recent data of the Damodar basin | do. |
| | Dispersion of black cotton and calcareous soils | do. |
| | Classification of laterite and red soils | do. |
| | Tidal model of the Hooghly estuary for the improvement of navigability of the river | do. |

| Organization | Nature of Investigation | Laboratory or Group investigating the Problem |
|---|---|---|
| | Reduction of range in the Madras Harbour | do. |
| | Reducing silting in Cochin Harbour | do. |
| | Aggregates, coarse and fine | Research Station, Hirakud—Hydraulic Works Section |
| | Strengths of drill cores representing the foundation materials of the dams | do. |
| | Cements—testing of all cements received at the Hirakud project; designing pozzolan cements and study of their characteristics; and hydraulic lime studies | do. |
| | Testing of reinforcement steel material | do. |
| | Temperature rise during hydration and setting of cement and cement-sand mortar | do. |
| | Waterproofing of shingle sand-cement blocks | do. |
| | Soil-cement block construction | do. |
| | Suitability of soil in the Hirakud region for brick moulding | do. |
| | General testing of strength of hollow blocks, bricks, crushed stones, etc. | do. |
| | Laboratory studies on concrete mixers in construction | do. |
| | Routine testing of silt | Research Station, Hirakud—Hydrology Section |
| | Discussion of silt data | do. |
| | Special silt investigations on suspension and transportation of silt by flowing water and its distribution along the vertical depth, sampling technique, and bulk silt samples collected during river freshets | do. |

| Organization | Nature of Investigation | Laboratory or Group investigating the Problem |
|---|---|---|
| | Plasticity characteristics of some hidden soils | Research Station, Hirakud—Soil Science and Soil Mechanics Section |
| | Comparison of direct and triaxial shear test results | do. |
| | Variation of shear strength of soils with differences in state of saturation | do. |
| | Comparison of the field and compaction data of soils | do. |
| | Load and penetration tests for bearing capacity of soils | do. |
| | Development of field method of soil testing for optimum moisture and maximum density | do. |
| | Investigation of materials for filter blankets for earth dams | do. |
| | Soil survey and analysis—rapid reconnaissance soil survey of the acres proposed to be irrigated by the Hirakud project | do. |

## REPORTS RECEIVED

The Council acknowledge with thanks the following two reports received from the Planning Commission, Government of India: (1) Report on Public Administration, and (2) Report on the Efficient Conduct of State Enterprises, both by Shri A. D. Gorwala. The reports have been placed in the Library for reference by members.

The Council's thanks are also due to the Central Water and Power Commission New Delhi, for a copy of the Report of the Advisory Committee for Reconnaissance and Survey of the Earthquake and Flood-affected Areas in North-East Assam. The report has been placed in the Library.

## OBITUARY

### Prof. F. G. Royal-Dawson

The death occurred on August 16, 1951, at Waterlooville, Hampshire, England, of Prof. F. G. Royal-Dawson, M.I.C.E., F.R.S.A., M.Inst.T., M.I.E., one of the earliest members of the Institution, at the age of 84. Born in Ootacamund, India, Prof. Royal-Dawson was educated at Elizabeth College, Guernsey, and at Cooper's Hill, where he took the Diploma in the 1st class. He then served a period of apprenticeship with the Great Western Railways at Swindon.

He was appointed Assistant Engineer in the Indian Railways in 1889 and rose to be Executive Engineer in 1897 and Superintending Engineer in 1910. He became the Chief Engineer of the North-Western Railway in 1917, and two years later was appointed Chief Engineer of the Railway Board and Chairman of the Indian Railway Bridges Committee. He retired from the Indian Railways in 1921.

Among the several large railway engineering works carried out by Prof. Royal-Dawson during his years of office in India should be mentioned the Valley Railway construction in Burma in 1890-95 and the Agra-Delhi chord line in 1902-04. During the First World War, he was Lieutenant-Colonel commanding the 1/24th North-Western Railway Battalion, Indian Defence Force 1917-18, in the Mahsud operations in 1917. He was known in India for his strong views on railway gauge policy and read and discussed a paper on 'The Indian Railway Gauge Problem' before the Institution of Civil Engineers, London, in 1921.

On his retirement from the Indian Railways, Prof. Royal-Dawson became Professor of Road and Railway Engineering at the Cairo University for three years. He was well known in England for his series of books on road transition curves.

He joined the Institution in 1921 as a full Member and was thus, at the time of his death, one of its oldest members.

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## Dr. A. H. Pandya

Dr. Anant H. Pandya, B.E., M.S., Sc.D., M.Am.Soc.C.E., A.M.I.Struct.E., A.M.I.Inst.W., M.A.R.P.I., M.I.E., was killed in a car accident near Mogra, near Calcutta, on June 1, 1951. Born in 1909, Dr. Pandya graduated with the B.E. degree in Civil Engineering from the University of Bombay in 1930, being placed first in order of merit and securing the James Berkeley Gold Medal and Prize. He then proceeded to the U.S. for higher studies and took the M.S. of the Massachussets Institute of Technology in 1931. Awarded the Austin Research Fellowship in 1932, he took the Sc. D. of the same Institute in 1933.

On his return to India, he joined McKenzies Ltd. of Bombay in 1934. In 1935 he went to England and was connected with the Trussed Concrete Steel Co., Ltd., and Diagrid Structures Ltd., both of London, till 1939, rising to be Chief Engineer of the latter firm in 1937. In 1938, he received jointly with Mr. R. J. Fowler, also of Diagrid Structures Ltd., the second Grand Award of $11,397.06 of the James F. Lincoln Arc Welding Foundation, Cleveland, Ohio, U.S.A., in their $200,000 Award Programme, for their paper 'All Welded Grid applied to Plane and Spatial Structures', in which they showed that saving of $60,000,000 is available through use of a new design of framing for floors and roofs of buildings.

He returned to India in 1939 as Principal of the Bengal Engineering College, the youngest ever to have held the post. The Air Force Mechanics Training Scheme of the Civil Aviation Directorate and the Technical Training Scheme of the Labour Department of the Government of India were started in the College in 1941 under his direction. He was also appointed Regional Inspector of the Eastern Circle for the technical training schemes of the Government of India. He left the College in 1943, when his services were requisitioned by the Government to further the war effort, to take up the post of Director of Metals in the Directorate-General of Munitions Production, Calcutta. He rose to be Deputy Director-General (Engineering) in 1944 and was later Deputy Director-General (Coordination). He left the Directorate-General in 1945 and joined Birla Bros. Ltd., Calcutta, as Adviser. He was then successively Consulting Engineer, Hind Construction Co.; General Manager, Hindustan Aircraft Ltd., Bangalore ; and Chief Engineer, Patel Engineering Co., with whom he was still attached at the time of the fatal accident.

Dr. Pandya joined the Institution in 1935 as an Associate Member and was transferred to full Membership in 1944. He was at the time of his death the Convenor of the Steel-Saving Committee of the Institution appointed at the instance of the Government of India to go into the question of steel saving in India.

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# BULLETIN OF THE INSTITUTION OF ENGINEERS (INDIA)

Vol. 1 No. 3
MARCH 1952

8 GOKHALE ROAD,
CALCUTTA.

# INSTITUTION ACTIVITIES, NEWS AND NOTES

Vol. 1 MARCH 1952 No. 3

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## CORRIGENDA AND ADDENDA TO THE ANNUAL REPORT OF THE COUNCIL FOR 1950-51

The following corrections and additions are to be made to the Annual Report of the Council which was circulated to members before the 32nd Annual General Meeting and which was adopted by the General Body at New Delhi subject to these corrections and additions being made.

1. Page 2. Delete the number ' 1 ' in the column ' Companions ' in the membership table of Central India Centre.

2. Page 21. Read ' Rs. 48,213-4-0 ' for ' Rs. 48,213-11-1 ' for the total of donations under item 12 (ii).

3. Page 34. Read ' Rs. 17,200 ' for ' Rs. 17,000 ' against ' 3% Loan 1951-54 ' under Central India Centre's Building and Library Fund investments.

4. Page 36. Add the following between items 34 and 37 :

' 36. *Dr. Shiv Narayan—Ad-hoc Committee of the Indian Standards Institution for the Re-constitution of the Indian National Committee of the I.E.C. ; All-India Council for Technical Education ; and Sub-Committee on Provision of Lightning Conductors for Departmental Buildings.*

The second meeting of the Indian National Committee of the I.E.C. was held in June 1951 and subjects discussed included proposals for new technical committees, nomination of delegates to I.E.C. meetings, collaboration with international organizations, an international electrotechnical vocabulary, and new subjects for standardization.

The sixth meeting of the All-India Council for Technical Education was held in January 1951 and main items discussed were the composition of regional committees and demarcation of regions, re-constitution of the All-India Board of Technical Studies, investing of the Council with statutory powers for conferring degrees in engineering, technology and commerce, bill for registration of engineers, and report of the joint committee on training in industrial administration and business management.

The Sub-Committee on Provision of Lightning Conductors held its first meeting in August 1951 and decided to issue the code to be prepared by the Sub-Committee under the title ' Protection of Structures against Lightning '.'

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## THE 33RD ANNUAL GENERAL MEETING—PLACE AND TIME

At their meeting held in New Delhi on January 20, 1952, the Council resolved to hold the next Annual General Meeting of the Institution at Bombay in January-February 1953.

## HINDI SUPPLEMENT TO *JOURNAL*, VOL. 31, NO. 2, DECEMBER 1951

The Hindi Supplement to the December 1951 issue of the *Journal* was received too late at Headquarters for inclusion in the bound *Journal* before distribution to members. Although despatched by the Aryabhushan Press, Poona, well in time, unaccountable delay occurred in rail transit. As it was essential that the *Journal* be distributed in time to members before the 32nd Annual General Meeting, the *Journal* was bound and distributed without the Hindi Supplement. The latter was subsequently received and distributed.

## LIST OF MEMBERS

The proposed publication of List of Members is well in hand, although it will be appreciated that the compilation of such a volume will take some time. Compilation has been handicapped owing to a large number of members failing to return the two printed circulars which were enclosed with the June and September 1951 issues of the *Journal* respectively. Response to the second circular has been especially poor. The names of members who have failed to return the circulars are therefore being filled in from office records and every effort is being made to make the list as accurate as possible in the circumstances.

## THE INSTITUTION OF ELECTRICAL ENGINEERS, LONDON—CONVENTION ON 'THE BRITISH CONTRIBUTION TO TELEVISION', APRIL 28-MAY 3, 1952

Further details of the above Convention to be held in London can now be given.

Copies of the Programme and combined Registration and Order Form will be available soon and will be sent to all those who have asked for details of the Convention, either by means of the special reply form or by letter. Anyone who has not yet applied and requires details should do so either through the Secretary of our Institution or direct to the Secretary of the Institution of Electrical Engineers as soon as possible, so that his name can be included in the circulation list. Oversea visitors will be especially welcome.

It is expected that the number of technical papers on which discussion can take place will be between 60 and 80; many of these papers have already been submitted.

Advance copies—in proof form—of all papers will be available during April 1952, and will generally be supplied in sets (each set comprising those papers allocated to a particular session), to all those signifying their requirements on the Registration and Order Form. After the Convention, four issues (Nos. 17-20) of Part IIIA of the *Proceedings of the Institution of Electrical Engineers* will be published, containing the proceedings of the Convention, including addresses and full text of the discussion (with authors' replies) on all papers. Part IIIA should be ordered at the same time as the sets of proofs.

During the technical sessions, covering all aspects of television from the programme production to the viewer, there will be interesting demonstrations of television equipment, including large-screen projection television, and, it is hoped, an early Baird 30-line equipment, which is at present being reassembled. During the Convention the visits of inspection which will be open only to registered members and their ladies, will include B.B.C. television studios and the latest television transmitters, the Post Office Research Station, commercial organizations manufacturing television equipment, the terminal equipment of the London—Birmingham co-axial cable link, etc.

In addition, a number of social functions are being arranged to which it is hoped registered members will bring their ladies.

The sessions into which the Convention is being divided are:

Programme origination—covering cameras, camera channels, studio lighting, film scanners, etc.

Point-to-point transmission—permanent and temporary cable and radio links, television-transmission measuring equipment, etc.

Broadcasting stations—vision transmitters and techniques, aerials and feeders, etc.

Propagation—ionospheric influences in television reception, selection of television transmitter sites, etc.

Receiving equipment, Part I—receiver circuit techniques: time bases, scanning systems, interference and its suppression, etc.; Part II—cathode-ray tubes and valves: design factors, life testing, etc.

Non-broadcasting applications—large-screen television design problems, medical applications, film aids, television wire broadcasting, etc.

System aspects—fundamental aspects of colour television, test equipment for television systems, subjective aspects of viewing, contrast, etc.

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## THE INSTITUTION OF ELECTRICAL ENGINEERS, LONDON—ABRIDGED WIRING REGULATIONS

The Institution has received a copy of the Abridged Wiring Regulations published by the Institution of Electrical Engineers, London. The Abridged Regulations (83 pages), are a shortened version of the 12th edition of the Regulations for the Electrical Equipment of Buildings issued by the Institution of Electrical Engineers on May 1, 1950. For convenience as a pocket companion, the format is 6⅜ in. × 4⅛ in. and binding is in limp cloth. Copies may be obtained from the Institution of Electrical Engineers, Savoy Place, London, W.C.2., price 2s. 6d. including postage. Copies of the full 12th edition are also available, price 5s. (paper covers) or 7s. 6d. (clothbound), including postage.

## THE INSTITUTION OF ENGINEERS, AUSTRALIA ANNUAL CONFERENCE, MAY 5-10, 1952

The Institution of Engineers, Australia, is holding its Annual Conference in Sydney from May 5 to 10, 1952. A circular with programme of the Conference has been received at Headquarters.

The Institution of Engineers, Australia, cordially invites any of our members resident in Australia or visiting Australia at that period to attend the Conference under the same conditions as members of that Institution, and hopes that some of them will be able to do so.

Members who expect to be able to attend the Conference should write to the Secretary of our Institution for details of the programme and charges.

## THE 31ST BRITISH INDUSTRIES FAIR, MAY 5-16, 1952

The 1952 British Industries Fair, London and Birmingham, will open on May 5, 1952, and close at 4 p.m. on May 16, 1952. All sections will be open daily (except May 11, 1952) from 9.30 a.m. to 6 p.m.

The Fair is organized by the Government of the United Kingdom in close collaboration with the Birmingham Chamber of Commerce. The London section is managed by the Commercial Relations and Exports Department of the Board of Trade, Lacon House, Theobalds Road, London, W.C.1. The section at Birmingham is managed by the Chamber of Commerce, 95, New Street, Birmingham 2.

A booklet has been issued to give the intending visitors to the Fair as much advance information as possible and may be obtained by those interested from the British Government's commercial representatives in India. Later and more detailed information as it becomes available in London and Birmingham will be constantly supplied to these representatives, and intending visitors should, therefore, ask them for any help or information they may require.

Visitors travelling to the British Industries Fair may wish to plan their tour so as to include some of the other Fairs held in Europe, dates of which are:

| | | |
|---|---|---|
| Belgium | Brussels International Fair | April 26-May 11 |
| | Liége International Fair<br>(Engineering and Heavy Industries) | April 26-May 11 |
| Denmark | Copenhagen International Fair | |
| | Technical Fair | April 26-May 5 |
| | Commercial Fair | Mid-May |
| France | Lyons International Fair | April 19-28 |
| | Paris International Fair | May 17-June 2 |
| Germany | Hanover Fair (International) | April 27-May 6 |
| Italy | Milan International Samples Fair | April 12-19 |

| | | |
|---|---|---|
| Netherlands | Utrecht Spring Fair | March 25-April 3 |
| Spain | Valencia International Samples Fair | May 10-25 |
| Sweden | Swedish Industries Fair, Gothenburg | May 17-25 |
| Switzerland | Swiss Industries Fair, Basle | April 19-29 |

## BUILDING RESEARCH CONGRESS 1951—COPIES OF PAPERS PRESENTED

Books containing the papers presented in the three Divisions of the Congress are obtainable, price 22s. 6d. each or 50s. for the set of three, from the Organizing Secretary, Building Research Congress, 1951, Building Research Station, Garston, Watford, Hertfordshire, England. Early application is desirable. Members of the participating bodies of the Congress may obtain single books at 17s. 6d. each.

**Division 1** book contains papers on building techniques, structural matters and soil mechanics.

**Division 2** contains papers on building materials.

**Division 3** deals with acoustics, heating and ventilating, lighting, and with problems of hospitals, factories and schools.

The three books together present an up-to-date picture of the present position of building research.

**Record of discussion**—The record of discussion which took place at the technical sessions of the Congress may be ordered now in advance of publication, price 25s. (20s. to Congress members).

## SOCIETY OF CHEMICAL INDUSTRY, LONDON—CONFERENCE ON ADHESION, LONDON UNIVERSITY, APRIL 22-24, 1952

The Society of Chemical Industry is organizing a Conference on Adhesion at the William Beveridge Hall, Senate House, London University, W.C.1, from April 22 to 24, 1952.

The Conference will be open to members of the Society and other interested persons on payment of the Conference fee of 10s. for members of the Society and £2 for non-members.

The membership fee includes in each case a copy of the pre-printed contributions to the Conference and the right to purchase a copy of the volume of papers with the addition of the discussions, if this be separately published, at a special low rate.

Applications for membership of the Conference should be made to the General Secretary, Society of Chemical Industry, 56, Victoria Street, London, S.W.1

## UNITED STATES DEPARTMENT OF COMMERCE—34TH NATIONAL METAL EXPOSITION, PHILADELPHIA, PA., OCTOBER 20-24, 1952

The 34th National Metal Exposition will be held between October 20-24, 1952, at Philadelphia, Pennsylvania. Members interested may communicate directly with Mr. Chester L. Wells, Assistant Director, National Metal Exposition, care of American Society for Metals, 7301, Euclid Avenue, Cleveland 3, Ohio.

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## THE INDIAN STANDARDS INSTITUTION

The Indian Standards Institution have drawn up a Five-Year Plan of Development to meet the demand for standardization to cover all fields of industrial activities. This plan is being considered by the Planning Commission who have already approved the part relating to the year 1952-53. The plan envisages the opening of four new sections and divisions :

(1) The International Electrotechnical Commission Section dealing with standardization in the field of electrical engineering, both heavy and communications,

(2) The Building Division dealing with buildings, roads and other public works,

(3) The Steel Economy Section to bring about an effective economy in the utilization of steel in this country, and

(4) The Agricultural and Food Products Division to take up as an emergency measure the standardization work in the field of foodgrain storage and allied problems.

The ISI Certification Marks Bill, which was being dealt with by a Select Committee when Parliament adjourned, will again be taken up at the next session and by the newly elected Parliament. The Five-Year Plan envisages that by the time the legislation is passed, many of the ISI standards will have been issued and a good many of them in actual use. This will make it possible for the industry to take immediate advantage by its provisions, which are calculated to encourage improvement in the quality of indigenous products at home and abroad and to promote that degree of confidence among consumers which the Indian products rightly deserve.

With the opening of the above four sections and divisions, the Indian Standards Institution hopes to cover most major fields of industrial activity in the country and establish in the next five years standards which promote the development of industries, encourage rational methods of distribution, and ensure to the consumers products of acceptable quality and standards.

## INDIAN STANDARDS INSTITUTION PRESS NOTES

The following press notes on standards or draft standards of interest to engineers have recently been issued by the Indian Standards Institution.

### (1) Building Hardware Standards

The latest in the series of standards on building hardware is the Standard Specification for Sliding Door Bolts for Use with Padlocks (IS : 281-1951) just published by the Indian Standards Institution.

The question of providing economical buildings for housing factory labour and other wage-earners in the lower middle classes is receiving the serious attention of Government departments and research organizations. Large quantities of building hardware, such as door bolts, butt hinges, gate and shutter hooks and eyes, and door handles are required for this purpose. To assist Governments, factory owners, private builders and contractors, the Indian Standards Institution has already published standards for these items.

The standard covers the requirements for sliding door bolts of two types (mild steel and brass), commonly used in general building construction for locking doors, gates, etc. with padlocks. For each type four sizes have been prescribed, and the dimensions and design of each given in detail with suitable figures drawn to scale. The requirements specified are in respect of the chemical compositions and tensile strength of the mild steel sheets, plates and rods, and rolled brass bars and brass castings used in the manufacture of the article, and also in regard to its dimensions, fabrication, finish, marking and packing.

The standard is available for sale and may be obtained from the Secretary (Administration), Indian Standards Institution.

### (2) Chemical Analysis of Lead

The Indian Standards Institution has formulated the 'draft Indian standard methods of chemical analysis of lead' which have been circulated for review and comment to interested parties.

Lead belongs to the important group of non-ferrous metals used in building and engineering trades and for general purposes. The Basic Non-Ferrous Metals Sectional Committee of the Indian Standards Institution has been engaged in formulating standard specifications on these metals and alloys. Recently, draft standards for lead sheets and lead pipes were issued in circulation for review and comments, but to determine the chemical composition of lead, as laid down in standard specifications, it is necessary to prescribe referee methods. The Sectional Committee has, therefore, formulated the 'draft Indian standard methods of chemical analysis of lead'.

The draft standard specifies sampling methods separately for pig lead and wrought and cast lead. It prescribes the electrolytic method for determining copper and bismuth content, the manganese co-precipitation method for determining arsenic, antimony and tin content, and three other separate methods for determining the percentage of zinc, iron and silver.

### (3) Indian Standard for Cement

A standard of great national importance, the Indian Standard for Cement, has been recently issued by the Indian Standards Institution. The estimated production of cement factories for 1951 is 3 million tons, worth about Rs. 22 crores and 50 lakhs. Cement derives its importance from the fact that it is one of the few commodities which can figure in every major national developmental scheme, such as of irrigation, communication and housing for labour. So far British Standard Specifications for Portland Cement (Ordinary and Rapid-Hardening) and Low Heat Portland Cement have been current in this country. For some years past, it has been felt that these specifications, though otherwise generally acceptable, do not permit of economical utilization of the country's resources to the full. The Cement and Concrete Sectional Committee of the Indian Standards Institution gave this matter careful attention and after making enquiries with other national standardization bodies and associations concerned with the standardization and utilization of cement, prepared the national standard for cement with the title, 'Indian Standard Specification for Ordinary, Rapid-Hardening and Low Heat Portland Cement (Tentative), IS : 269-1951'.

The standard covers the following three types of Portland Cement:

(a) Ordinary Portland Cement used for normal constructional purposes,

(b) Rapid-hardening Portland Cement for use where high early strength is required, and

(c) Low heat Portland Cement for use where low heat of hydration is required, as in mass concrete of dams.

The specification lays down chemical and physical requirements, with stipulation in respect of storage, sampling, testing and delivery. The characteristics of cement entering in the prescribed requirements are chemical composition, fineness, soundness, setting time, tensile strength, compressive strength and heat of hydration. Tests to evaluate these characteristics are laid down in detail in eight separate appendices, duly supported with a number of suitable figures.

Of special interest is the fact that it has been considered safe to increase the permissible upper limits for the magnesia content and insoluble residue of the ordinary and rapid-hardening types to 5 and 1.5% instead of 4 and 1% respectively. In view of these changes, the need for proper grinding, blending and burning of raw materials has been specially emphasized. Again, the Indian Standard Temperature for general testing is 81°F., but for the sake of convenience in testing, the range to be maintained during test has been specified as 80 to 90°F. Finally, in order to keep abreast of progress, the specification has been issued as a tentative standard for a period of three years.

The standard is available for sale and may be purchased from the Secretary (Administration), Indian Standards Institution.

### (4) Austenitic Manganese Steel Castings

Austenitic manganese steel castings have a high content of manganese and are characterized by high ductility and greater resistance to wear. They are widely used where steel possessing high resistance to abrasion is required as in coal crushers and similar type of equipment in cement mills.

The 'Indian Standard Specification for Plain Austenitic Manganese Steel Castings, IS: 276-1951' covers the requirements for plain austenitic manganese steel castings used in general engineering work. The standard prescribes the process of manufacture of steel for the castings, their chemical composition and heat treatment, and contains necessary instructions on moulding and inspection for defects. Among the mechanical tests, hardness test and bend test are specified, with provision for re-tests. Other items covered by the standard include marking, repairs to castings by welding, inspection and testing facilities and test certificates.

The standard is available for sale and may be obtained from the Secretary (Administration), Indian Standards Institution.

### (5) Standard for Copper Conductors

The Indian Standards Institution has just published standard specifications for copper conductors. The standardization of copper conductors for power transmission purposes was taken up by the Electrical Conductors and Insulators Sectional Committee of the Indian Standards Institution, in view of the fact that electric power is being generated on a large scale in the country, and with the completion of multipurpose projects in hand or about to be taken up, considerable expansion will take place in the power producting units, and with them in the power transmission systems in the country. The labours of the Committee have resulted in the preparation of 'IS: 282-1951, Indian Standard Specification for Hard-Drawn Copper Solid and Stranded Circular Conductors for Overhead Power Transmission Purposes'.

The standard defines terms used in it, and gives formulae for calculating resistance, density, etc. of hard-drawn copper. It prescribes standard resistances, weights and sizes of solid and stranded conductors, tolerances on them, and mechanical properties, and lays down stipulations in respect of joints and stranding. Only primary sizes of conductors have been included in the specification with a view to rationalize production and to assist in evolving standardized line designs and construction practices. Though it is realized that secondary sizes may continue to be used for some time more for replacement and other special requirements, the standard recommends that users should make every endeavour to confine themselves to the sizes listed in it.

The mechanical and electrical tests prescribed are the lapping, tensile, elongation and resistance tests. The basic constants of hard-drawn copper such as resistance, density, coefficient of linear expansion, etc. given in the standard correspond to those of BS : 125-1947. The standards fixed for annealed copper by the International Electrotechnical Commission are reproduced in an appendix, and the question of aligning the Indian standards with the IEC standards is under the active consideration of the Institution. Though the difference from the practical point of view is not highly significant, yet the standard has been issued as tentative, and comments of users are invited for consideration of the committee.

The standard is available for sale and may be obtained from the Secretary (Administration), Indian Standards Institution.

# RESEARCH—PROBLEMS UNDER INVESTIGATION IN LABORATORIES IN INDIA

Further to the list published under the above head on pages 10-14 of the *Bulletin* for December 1951 (Vol. 1, No. 2), problems under investigation at the Central Standards Office, Ministry of Railways, are given below :

| Organization | Nature of Investigation | Laboratory or Group investigating the Problem |
|---|---|---|
| Central Standards Office, Ministry of Railways | Investigation of stresses in rails and fish-plates | Research Wing |
| | Investigation of lateral strength of track | do. |
| | Investigation of strength of batten-plated struts | do. |
| | Investigation of strength of trough flooring on railway bridges | do. |
| | Experimental investigation of prestressed concrete bridge girders | do. |
| | Determination of flange forces exerted by locomotive on track | do. |
| | Investigation of fatigue strength of rails and welded joints | do. |
| | Determination of bearing pressure and settlement of founds under railway bridge piers | do. |
| | Determination of soil properties and compaction for the design of high banks and deep cuttings | do. |
| | Determination of cement admixture for stabilizing soil for building purposes | do. |
| | Investigation of soil pressure in railway formation under traffic by means of pressure cells | do. |
| | Investigation into the most suitable and economical type of founds in black cotton soil | do. |
| | Experimental work on cinder concrete block construction for building purposes | do. |
| | Experimental work on cellular brick construction | do. |
| | Experimental work on reinforced concrete door and window frames | do. |
| | Experiments on suitable plasters for soil stabilized walls | do. |
| | Tractive resistance of passenger and goods trains at speeds | Mechanical Wing |
| | Capacity rating and performance of different types of locomotives | do. |

| Organization | Nature of Investigation | Laboratory or Group investigating the Problem |
|---|---|---|
| | Performances of the different types of valve gears to develop a design which will effect maximum economy in steam and adapt itself to manufacturing facilities in the country | Mechanical Wing |
| | Boiler performances with the various qualities of Indian coals in order that non-coking coals can be used satisfactorily for railway purposes and high grade coking coals be released for metallurgical purposes | do. |
| | Experiments with special equipment and auxiliaries to determine the fuel economy that can be effected by their different applications | do. |
| | Measurements of lateral and vertical forces exerted on the track by locomotives operating at speed | do. |
| | Analyses of stresses produced in locomotive components subjected to dynamic loads under actual working conditions for developing lighter components | do. |
| | Analyses of stresses produced in coaching and wagon stock under the extreme conditions to which they may be subjected in service for developing improved designs | do. |
| | Study of the behaviour of suspension springs of rolling stock for improving their riding qualities | do. |
| | Trials of indigenous fire-clay refractory bricks for loco arches for finding out if moderate heat duty grade A will serve brick arches in WP locomotives just as well as the 50% more expensive high duty bricks | Chemical and Metallurgical Wing |
| | Trials for practical wear tests on cast iron packing rings from three different mixtures giving Brinell Hardness Nos. 165 to 175, 195 to 205 and 225 to 235 with a phosphorous content not exceeding 0.5%. | do. |

## REPORTS RECEIVED

The Council thank the Central Water and Power Commission, New Delhi, for a copy of the report on 'Hydrological Research in the Arid and Semi-Arid Regions of India and Pakistan' by Shri R. D. Dhir, M.I.E., I.S.E., Director (Hydrology), Central

Water and Power Commission. The report was prepared for the Unesco under their Arid Zone Programme and reviews the bibliography on the subject with special reference to the development of underground water and fluid mechanics. The report has been placed in the Library.

The Council's thanks are also due to the Council of British Manufacturers of Petroleum Equipment for a copy of the 1951 Edition of 'British Petroleum Equipment', which is the third and largest catalogue (752 pages) of petroleum equipment manufactured in Great Britain. The book is priced at £2-2-0 and may be obtained from the Council of British Manufacturers of Petroleum Equipment, 79, Buckingham Palace Road, London, S. W. 1. The copy of the book received has been placed in the Library.

## SECTIONAL MEETING OF THE WORLD POWER CONFERENCE, NEW DELHI, JANUARY 1951—PRE-PRINTS OF PAPERS PRESENTED

A limited number of sets of pre-prints of papers presented at the Sectional Meeting of the World Power Conference held in New Delhi in January 1951 are still available in the Institution Office.

The price per set of 47 papers and 8 general reports as announced before in the *Journal* for June 1951 (Vol. 31, No. 4, p. 126) is Rs. 25.

## ADDRESSES WANTED

The mail of the following members have been returned undelivered. Will any members in a position to assist the Office with their present addresses please do so?

| Name | Address |
|---|---|
| | **Members** |
| Akerkar, K. R. | Superintending Engineer, Eastern Circle, Sholapur. |
| Arifuddin, Syed | Retd. Chief Engineer & Secretary, Bungalow No. 1246, P.W.D., C. H. School Lane, Abid Road, Hyderabad-Dn. |
| Biddulph, Charles Hubert | Deputy Chief Engineer, South Indian Railway, Trichinopoly. |
| Dias, Frank Ernest | Executive Engineer, G.I.P. Rly., Jhansi. |
| Guruswami, S. | 14, Jagadeeswar Street, Theyagarajanagar, Madras. |
| Henshaw, L. | 'Repose', Hatherley Road, Coonoor. |
| McIntosh, R. | 27, Anorum Road, Dundee, Angus, Scotland |
| Mirchandani, N.M. | 43, Pali Hill, Bandra, Bombay 20. |
| Savara, Amarnath | 5/C, Model Town, Lahore. |
| Slaughter, Lt.-Col. E. W. | General Manager, H.E.H. The Nizam's State Railways, Secunderabad-Dn. |
| | **Associate Members** |
| Bahadur, S. J. | Shahjahan Road, New Delhi. |
| Bakhle, Capt. W K. | T/5, Powder Works Road, Kirkee, Poona 3. |
| Basith, Mohd. Abdul | Administrative Engineer, The Hyderabad Construction Co., Ltd., Abid Road, Hyderabad-Dn. |
| Bhatnagar, P. S. | 253, Olin Hotel, 1420, Logan Street, Denver, Colorado, .U.S.A. |
| Bhusan, Arya | Divisional Executive Engineer No. 1, E. P. Rly., 89, Chelmsford Road, New Delhi. |

**Associate Members** (*contd.*)

| Name | Address |
|---|---|
| Chowla, P. D. | 30, Lodi Road, New Delhi. |
| Das Gupta, Ranjit Kumar | 50, Middle Road, P. O. Barrackpore, 24-Parganas. |
| Dutta, B. B. | District Engineer, B.N. Rly., Nagpur. |
| Ghanzi, Mirza Ahmed Baig | Divisional Engineer, P.W.D., Parbhani, N. S. Rly. |
| Ghose, S. K. | 1, Wellesly Place, Calcutta 1. |
| Gill, Chanan Ram | Temporary Engineer, c/o The Executive Engineer, Sirhind Canal, Ferozepur Cantt., East Punjab. |
| Gupta, Pran Krishan | Engineer, Daurala Sugar Works, Daurala, Dist. Meerut. |
| Hasan, Akhtar | S.D.O., Hydel Division, Budaun, U.P. |
| Hasan, Tajuddin | C/o The Sirpur Paper Mills Ltd., Himayathnagar, Hyderabad-Dn. |
| Iyengar, P. N. Sampath | S/22, Dam Site P.O., Hospet. |
| Krishnamurthy, M. G. | Assistant Engineer, C.P.W.D., 19, Aundh Road, Poona 3 |
| Leuchs, H. F. | Consulting Engineer, 'Hadley', Kilpauk Gardens Road, Madras. |
| Mazumder, N. | Assistant Superintendent Way & Works, Gaya, E. I. Rly. |
| Mowani, R. V. | S.D.O., No. D-I-60, Lodi Road Colony, New Delhi. |
| Rath, Nilkanta | Assistant Engineer, P.O. Phulbani, Dist. Phulbani, Orissa. |
| Risbud, H. N. | Assistant Technical Adviser (Eng.), Directorate General of Industries and Supplies Development Division (Eng.), Block 6, Room 198, Shahjahan Road, New Delhi. |
| Sadashiva Rao, P. | Project Officer, Central Technical Power Board, Govt. of India, Simla. |
| Sahai, J. D. | Assistant Engineer, Thermal Power Section, Damodar Valley Corporation, Anderson House, Alipore, Calcutta 27. |
| Sethna, B. P. | The Tata Hydro-Electric Power Supply Co. Ltd., Bombay House, 24, Bruce Road, Bombay. |
| Singh, Mehar | Executive Engineer, Simla Provincial Division, Simla. |
| Sukhrani, Ramchand Radhakrishin | Engineer Liaison Officer, P.W.D., c/o Chief Engineer, P.W.D., Shillong. |
| Talwalkar, S A. | Power House Superintendent, Chaibasa Cement Works, Jhinkpani, B.N. Rly. |
| Tewari, D. C. | C/o Shri Prahlad Saran Gupta, Postmaster, Meerut City, R.S. |
| Thakur, Arjun | Assistant Engineer, P.W.D., P.O.-Dehri, Shahabad. |
| Vembu, S. | No. 21, Ramanathan Street, Theyagarajanagar, Madras 17. |
| Venkateswaran, A. S. | C/o The Electrical Engineering Co., 34, Sri Theyagaraja Road, Madras. |

**Associates**

| Name | Address |
|---|---|
| Bleasdale, Major E. | 'Berchwood', Norsey Road, Billericay, Essex, England. |

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## OBITUARY

### Sir Thomas Sinclair Kennedy

Sir Thomas Sinclair Kennedy, Kt., F.R.S.A., M.I.E., J.P., died on March 20, 1951, in hospital in Glasgow, Scotland. Sir Thomas was born in Kilmarnock in 1884. He had his schooling at Perth and Broughty Ferry, Scotland, and at Fettes College, Edinburgh, before receiving his technical education in Mechanical Engineering at Kilmarnock and at Glasgow. Between 1901 and 1907 he took practical training with Glenfield and Kennedy Ltd., Kilmarnock.

In 1907 he joined the Robinson Deep Gold Mining Co., Ltd., of Johannesburg, Union of South Africa, as Assistant Resident Engineer. He left for India the following year to join Glenfield and Kennedy Ltd. at Bombay. He remained with the firm to become their General Manager for India and the East and retired from their service in 1946 when he returned to Scotland.

Sir Thomas executed many large engineering works on behalf of the firm and the following are specially worthy of mention: Badlapur Barrage, near Bombay; Deoha Barrage in the U.P.; Uhl River hydro-electric scheme hydraulic controls and gates; Pykara Headworks controls and valving, near Ootacamund; Mettur Dam hydraulic control section; and Pallivasal hydro-electric scheme valves and sluice gates in Travancore.

Sir Thomas was knighted in 1942 in recognition of his services to engineering in India.

Sir Thomas was both Secretary and President of the Bombay Engineering Congress, which was amalgamated to the Institution in 1943. He joined the Institution as a full Member in that year. He was also a Fellow of the Royal Society of Arts London.

## Shri K. Subrahmanyan

Shri K. Subrahmanyan, B.E., M.Sc., M.I.C.E., M.I.E., Professor of Sanitary Engineering, All-India Institute of Hygiene and Public Health, Calcutta, was killed in a plane crash at Dum Dum airport on November 21, 1951, while returning to Calcutta after attending a meeting of the WHO Expert Group on Cholera at New Delhi.

Shri Subrahmanyan was born in 1900. He was educated in Madras and received the B. E. degree in Civil Engineering of the Madras University in 1922. He also passed the Associate Membership Examination in Sections A and B of the Institution of Civil Engineers, London, in 1938 with Honourable Mention for receiving the highest marks.

After graduation, he worked for a year in the South Indian Railway. He joined the Paterson Engineering Co., Bombay, in 1924 as Assistant Engineer and served with this firm until 1926. He then joined the Madras P.W.D. and worked in various capacities till 1929, when he went to Ceylon as Assistant Sanitary Engineer to the Government of Ceylon. He proceeded to the U.S.A. in 1939, and working at the Harvard University received the M.Sc. degree in Sanitary Engineering in 1940.

He left the service of the Government of Ceylon in 1941 and joined the staff of the All-India Institute of Hygiene and Public Health as Assistant Professor of Sanitary Engineering. He became Professor in 1943.

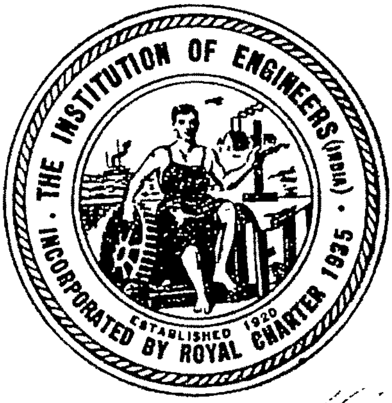
Shri Subrahmanyan made a contribution of great value to the problem of cholera prevention in overpopulated rural areas without the amenities of pure water and proper sanitation. He was due shortly to join the staff of the South-East Asia Regional Office of WHO in New Delhi as Regional Adviser in Environmental Sanitation when the fatal accident took place.

Shri Subrahmanyan joined the Institution in 1929 as an Associate Member and was transferred to full Membership in 1945. He contributed a valuable paper on 'The Design of Small Sewage Disposal Plants' to the *Journal* of the Institution, which was published in the June 1944 issue (Vol. 24, No. 4).

Supplement to the *Journal of the Institution of Engineers (India)*,
Vol. 32, No. 3, March 1952.

Published by P. P. Adalja, B.E., M.R. San. I., M.I.E.,
for The Institution of Engineers (India), 8, Gokhale Road,
Calcutta, and Printed by D. A. Lakin at The Statesman Press,
Calcutta.

# BULLETIN OF
# THE INSTITUTION
# OF
# ENGINEERS (INDIA)


THE INSTITUTION OF ENGINEERS (INDIA)
INCORPORATED BY ROYAL CHARTER 1935
ESTABLISHED 1920

Vol. 1 No. 4
JUNE 1952

8 GOKHALE ROAD
CALCUTTA

# INSTITUTION ACTIVITIES, NEWS AND NOTES

Vol. 1 JUNE 1952 No. 4

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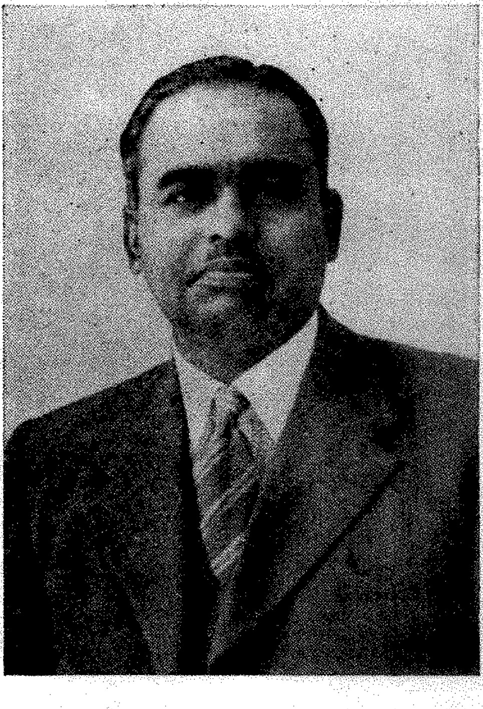
# ADDRESSES OF CHAIRMEN AT THE ANNUAL GENERAL MEETINGS OF THE LOCAL CENTRES

## Central India Centre

### Chairman's address by Shri H. P. Sinha, I.S.E., M.I.E., at the 25th Annual General Meeting of the Centre on February 17, 1952

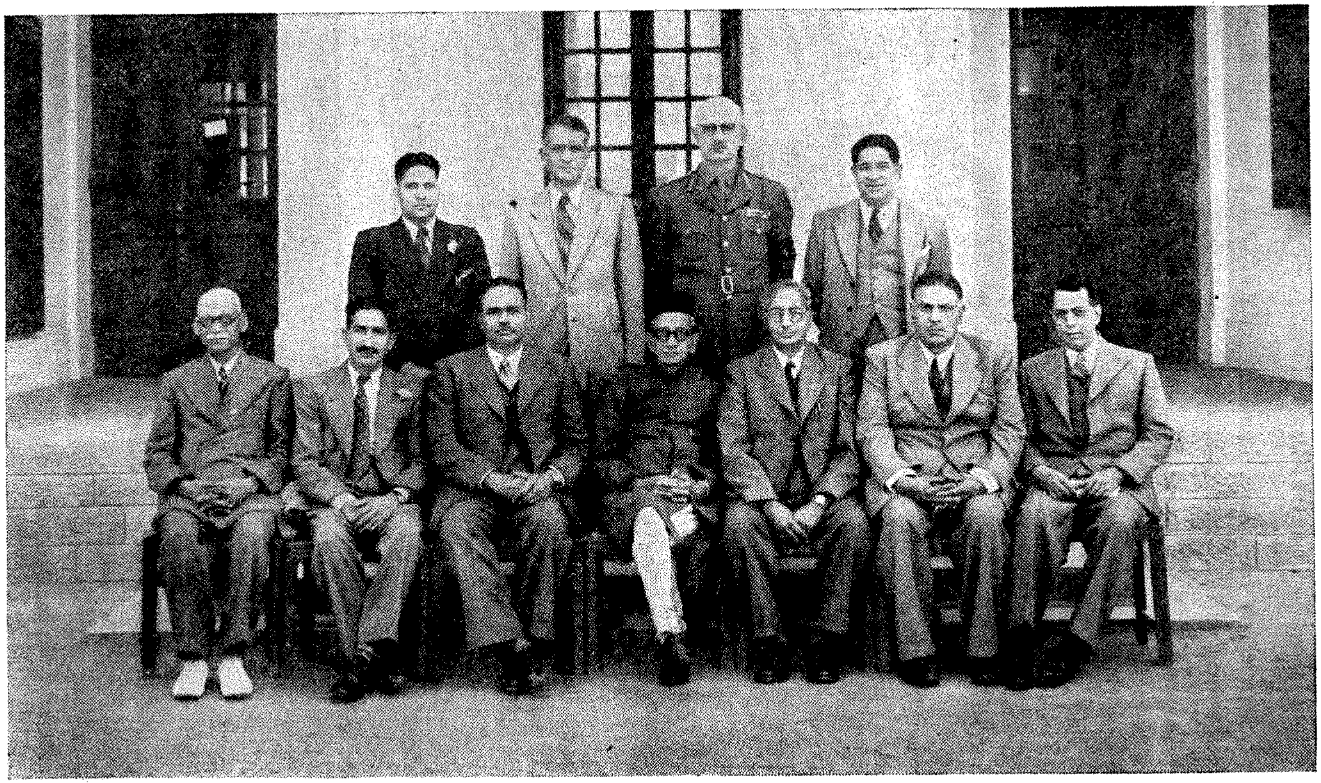
After welcoming the Chief Guest, Sir Shri Ram, and other guests, Shri Sinha said that the Local Centre of the Institution had made progress in all directions and had secured a building site measuring 1.5 acres in New Delhi at a concessional price of Rs. 6,000. The plans for the building had been prepared by Shri R. L. Gehlote, Senior Architect, Central P.W.D., who had agreed to give his services free to the Institution. The work of construction of the building had just started. It was the intention at present to construct a portion of the building costing about Rs. 2 lakhs. Funds to the extent of Rs. 92,000 had already been collected. All concerned were requested to make vigorous efforts for further collection.



Shri Sinha pointed out that although the history of India was replete with glory, she was very much behind other countries in material progress, and what was more important she did not seem to be making much real headway. He said that only those countries could prosper which could rear first class scientists and first class engineers. He placed the scientists at the top as it would need the highest form of intellectual training and development to make further progress over the vast material advance that the world had already made. He stressed that it was necessary for the country to create conditions by which the best brains were irresistably attracted towards the scientific profession.

He said that the next in order were the engineers to put the abstract principles evolved by the scientists into practical shape. The engineer was the backbone of production and so occupied a very important key position in society. It was for society to look after the engineer well so that he might work with the highest possible efficiency. Those having a natural aptitude for this profession should be guided towards it by society and should remain fully satisfied in their place to continue to work without distraction. He pointed out that during the last war the engineer dominated

## CENTRAL INDIA CENTRE—25TH ANNUAL GENERAL MEETING, NEW DELHI, FEBRUARY 1952



THE COMMITTEE 1951-52

(*Sitting L. to R.*) Dr. Shiv Narayan Brig. K. B. Rai H. P. Sinha (*Chairman*, 1951-52) Sir Shri Ram (*Chief Guest*) A. N. Khosla
M. S. Mathur S. A. Gadkary

(*Standing L. to R.*) I. N. Khanna R. S. Mehta Maj.-Gen. H. Williams (*Chairman*, 1950-51) T. R. Mehandru (*Honorary Secretary*) several fields of activity, and gave the example of the construction of more than 200 airfields in the country in that period, which was accomplished only because every one worked for the engineer. He advised that society should decide on the objectives to be pursued and then all concerned should work unitedly for those objectives and not fritter away their limited resources in other less urgent things.

He mentioned that the industrialists of advanced countries were keenly alive to the fact that their success depended on the ability of the scientist and the engineer. They, therefore, provided means for the engineer to translate the abstract findings of the scientist into realities. It was necessary for the industrialists in India also to realize the potential value of the research that is carried out by the scientist and the engineer.

Shri Sinha further said that with the growth of industry, the country would need more and more technical personnel and, therefore, the technical institutions should expand. But there was a great dearth of efficient technical teachers. This was due to the fact that emoluments for the technical teachers were not at par with the corresponding technical personnel in the executive line. He stressed that this inequality should be removed.

He mentioned that since the engineer occupied an important position in the life of the country, it was incumbent on society to see that he possessed and maintained a high standard of ability and conduct. He was of the opinion that the Institution of Engineers was one of the very effective means for ensuring this standard and therefore should receive the support of all concerned. He made it clear that the public was a very hard taskmaster in a democracy and, therefore, the engineers who had to perform a specified task would be expected to give of their best and must be prepared to stand public scrutiny. The engineer should be able to pass the severest tests if he acted firmly according to the dictates of the profession, and be ready to tell the truth even if it was unpalatable.

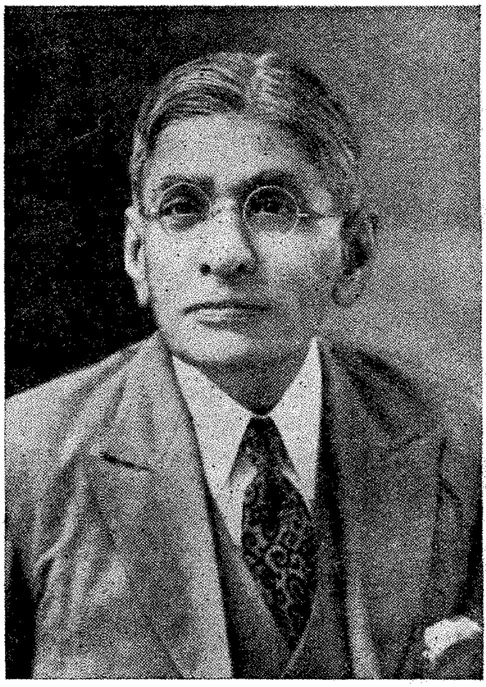
He said that it would be futile to expect the engineer, who was actively employed in works of construction, would also have spare time to ponder sufficiently over the intricate problems of economy, substitutes, alternatives, etc. Some technical commissions should be formed to find ways and means to give effect to the recommendations of the Planning Commission, and to see that the means adopted to reach the targets were technically the most suitable and efficient that could be devised within the limited resources of the country. Such technical commissions should be manned by people working wholetime and for a sustained period. He did not think that the present practice of appointing small committees from experts, who were simultaneously engaged in their normal duties, could be successful as they would not find sufficient time to do full justice to the work.

Finally, addressing the young engineers, he said that the future of the profession depended largely on them as, during the period of advancement of this country, they would mature and would find themselves at the helm of affairs. It was necessary for them to keep up their study, to travel extensively and visit works, and to study human nature. They would find in the Institution a guide, philosopher and friend to assist them at all stages.

## Hyderabad Centre

### Chairman's address by Shri J. R. Jussawalla, B.E., M.I.E., at the 14th Annual General Meeting of the Centre on December 14, 1951

After thanking his colleagues of the Local Committee for doing him the honour of electing him to the Chair of the Centre, Shri Jussawalla appealed for the active cooperation of all members to be able to steer the ship with success during the ensuing year. He then offered the thanks of the Centre to Nawab Ali Yavar Jung Bahadur, Vice-Chancellor of the Osmania University, for coming to inaugurate the session.



Referring to the newly built building of the Centre he appealed for more funds to enable the remaining items to be completed.

Referring to the administrative problem vital to the Public Works Departments, he pointed out the desirability and advisability of continuing the practice of appointing Chief Engineers as Secretaries to Government in the P.W.D. He felt it was wrong in principle that a Chief Engineer's proposal given with his knowledge and ripe experience of any matter should be subject to the scrutiny of a non-technical man. This anomaly did not exist in Hyderabad because they had the good fortune to have at the helm of the P.W.D. the Hon'ble Nawab Zain Yar Jung Bahadur, an engineer and architect of outstanding reputation with a rare and unique knowledge of men and materials available in the State. But much as they wished this would not continue for ever. The Chief Engineer alone was best qualified to lay bare and present the difficulties, technicalities and complexities of the various schemes and problems confronting the Department. He felt sure the Presidents of the three organizations, the Central Board of Irrigation, the Indian Roads Congress and the Institution, who had been authorized to place the case before the Government of India would succeed in their efforts to see that the Governments did not deviate from this long-established practice.

Shri Jussawalla then dealt with certain aspects of the Planning Commission's Report which bear on engineering works. Among the means for implementing the various proposals of the Five Year Plan, next only to finance was the provision of skilled manpower, for which the Plan gave no indication. The fact that our country was poorly equipped in technical education could not be denied. The various large projects envisaged in the Plan demanded the best skill and experience, and the highest integrity and intelligence, and to bring them to fruition highly qualified engineers and technicians in adequate numbers were required. A proper assessment of the right type of personnel capable of putting through these colossal projects was wanting in the Report. The means of producing this basic requirement were wanting in the practical proposals of the Report. The financial provision made for all types of education, basic, secondary, university, technical and social, worked out to 8.24% of the total outlay, and how much of this small percentage would be available for technical education was not indicated. In view of the failure of the Report on this vital and basic point, the Chairman appealed to the Institution to take up the question, and to collect and pool the best talent in the profession to formulate plans and schemes and to speed up their realization, and to launch a nation-wide appeal for funds for such a worthy cause.

While on this subject of technical education, he suggested that with a view to keeping the university teacher in engineering subjects abreast of the latest techniques in constructional practice, there should be interchange between the teaching and executive staffs, and, if this be not possible under the constitutions of the universities, he advocated special regulations and powers to provide for such interchange. This would act as a refresher course and make teachers of engineering alive to the needs of the profession from day to day.

Referring to the Five Year Plan in general he pointed out that 66.5 % of the total outlay dealt with principal engineering items exclusive of such subsidiaries as would also demand the attention of engineers. This colossal burden to be borne by the engineers of the country for the next five years demanded faithful, sincere and loyal effort, and to reduce costs and relieve the taxpayer of as much burden as possible, he advocated a preponderating non-official representation on boards for policy and control, and invigilating and priorities. Of the total allotted to Hyderabad, however, 76.8% dealt with principal engineering items.

Dealing with proposals on transport and communications, Shri Jussawalla said it sounded strange that protagonists of rural development and friends of the villager should attach greater importance to national highways than to rural roads, the absence of which latter was bemoaned in the Report as a serious drawback in the system of the country's communications. The need for rural development in the improvement of communications was dismissed with the advice to State Governments to pay special attention to the construction and maintenance of village roads by enlisting the cooperation of villagers by the mobilization of the local population for local projects. While the country wanted to utilize its manpower for all its needs, the villager could not be allowed to live in isolation by denying to him the advantages that would accrue through the establishment of village communications such as medical aid, markets for his produce, and so on. He hoped Hyderabad State would make a definite allotment for village roads out of the amount allotted to it for improvement of communications. He recommended cheap and durable specifications which the considerable development in the science of soil mechanics enabled them to adopt. The Hyderabad Engineering Research Laboratories had done useful work in developing the practice of soil mechanics and were now equipped with a few field laboratories. Their experiments and results should be availed of. He would not hesitate to advocate priority for village roads over State highways. In the matter of transport, Shri Jussawalla felt it difficult to comprehend how the existence of the efficient and 19 years' old Road Transport Service of Hyderabad State, which deserved to be brought to the notice of other organizations existing and about to be born, was ignored in the Report.

The omission of any provision for housing in Hyderabad in the Report appeared inexplicable and deplorable. The Hyderabad Engineering Research Laboratories had evolved a cheap and healthy house, a full-sized model of which formed a notable contribution by Hyderabad to the International Exhibition held in Delhi last year. This elicited the appreciation of the Prime Minister who directed it to be put up in the compound of his official residence.

The Chairman then criticised some of the recommendations made in the Report for reducing building costs. While some of the suggestions were of value and demanded the close attention of engineers in the country, he condemned the stress laid on standardization of designs even in such detail as sizes of doors and windows. Type designs or standardization or regimentation as he preferred to call it, Shri Jussawalla said, had a very serious effect upon the outlook of our engineers, crushing all originality, cramping initiative, and reducing the building engineer to a kind of automaton. Any mistake would spread throughout the country and constitute an irremediable feature of our residences. Variations in climatic conditions, in availability of materials, in nature of soils, and in other similar factors demanded that our engineers be left free to think and work things out for themselves, consistent with local conditions.

Shri Jussawalla severely criticised the recommendation on the amount of a contract to a tentative ceiling of Rs. 5 lakhs on the specious plea of saving in cost. In the first place there was the utter failure to realize that in the prevailing circumstances a single item of work alone might cost more than Rs. 5 lakhs. This recommendation to employ smaller contractors was detrimental to the efficiency and speed in execution of works and to the quality of the output. Questionable methods and practices adopted by smaller contractors undermined the moral fabric of the profession. No one was more responsible for giving a bad name to our young engineers and their work than the smaller contractor. He deplored that the Report attempted to countenance and perpetuate this undesirable element in the profession and its ethics on the untenable argument of saving in cost, and he pointed out in detail how low rates eventually lead to losses which far outweigh the higher rates quoted by larger firms, and how questionable tactics employed by the small contractor result in corruption, inefficiency, bad work, delays in completion, and even black markets in materials like cement and steel supplied to them. He said, 'Let it be the duty of all engineers to see that this recommendation of employing a small contractor in preference to a larger firm and of having a ceiling is never implemented. Therein lies the engineer's own salvation and if ever an attempt is made to implement this we must fight it tooth and nail.'

Referring to major irrigation and power projects, Shri Jussawalla expressed satisfaction at the provision made for them in Hyderabad, although he felt the needs for Hyderabad in this direction were not met to any appreciable extent. Under the Plan an additional acreage of 680,000 would be brought under irrigation benefits and 60,000 kW of power made available within the next five years. Those hesitant and querulous people who doubted if all the benefits would accrue and if all this power would be demanded had no place in the present-day scheme of things. Just as it could be justifiably said of railway projects that 'traffic follows the track', so could it be said that 'load follows the power' and 'crops follow the canal'. These were days of bold decisions, and young engineers had to implement them with thoroughness and assiduity. Although Rs. 40 crores in 5 years for Hyderabad needs was not much money, it was good money, of which 80% would pass through the hands of engineers, and he implored them to see that every pie of it was well and truly spent.

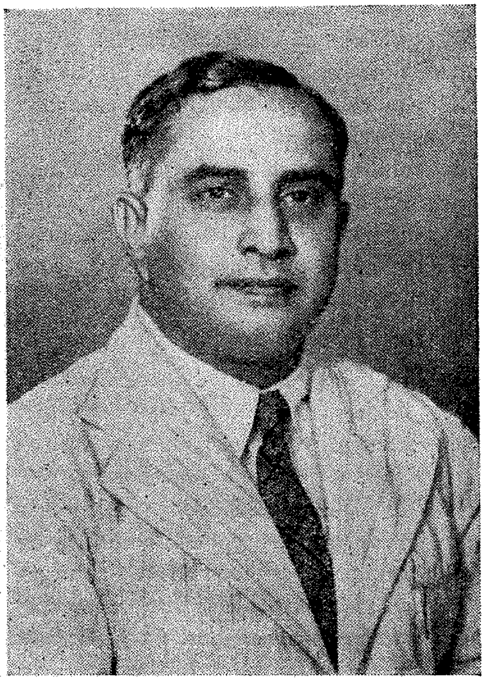
Turning to public cooperation Shri Jussawalla said this was a reversion to the old methods which had resulted in good output in the past but which mischievous propaganda and insidious preachings had rooted out, and we could only hope for the return to the fine cooperative system that existed and worked smoothly in the past. The Plan suggested enlistment of public cooperation on a nation-wide scale and arousing mass enthusiasm in the country, and at the same time threw a damper upon such enthusiasm by urging such financial arrangements as the levy of betterment fee, upward revision of water rates, levy of agricultural income tax, and even the levy of betterment contribution in the form of land from larger holdings. And all this was urged by those who have talked of the proverbial poverty of the farmer, who before he could reap any benefit out of these schemes or even had time to realize that there was something going to be really to his benefit found the heavy and cruel axe of further taxation looming large upon the horizon of his prosperity. That perhaps was the unkindest cut of all in this unkind Report.

He then concluded thus, 'But engineers shall not flinch or falter because of the politician. I feel sure you will carry through the works that have been, are to be, and will be entrusted to you with loyalty and faithfulness. You shall not waver because vested interests make inroads upon your integrity. You must carry through these great works with energy and skill of the highest order with exceptional integrity, industry and hard labour. To the seniors and the highly placed among you, I would urge for quick decisions which can come only by rushing to the spot and not indulging in the red tape of queries and shunting files from one officer to another. The preparation of designs must be expedited and the solution of problems that arise during construction should be promptly effected. The young engineer must carry this vast and colossal burden on his square shoulders. Put your shoulder to the wheel, no matter how oily, how greasy, how muddy it may be. Do not be afraid of spoiling your Cashmere and tweed coats and your silk bush-shirts. Exchange them for khaki and dungaree. Do not leave the field and the shop to overseers and supervisors. Be on the spot to guide, to inspire, to help the men under your command. Struggle strenuously and strive steadfastly to carry through the works that are coming to you. They are coming to you because it is your fate, your lofty destiny to help and better the lot of your fellowmen. They are coming to you so that more food may grow and the pangs of hunger be banished from this land. They are coming to you so that the shame of nakedness may vanish. They are coming to you so that black markets may be doomed to the blackest oblivion. Great is the mission before you. Your energy, your enthusiasm, your integrity will accomplish it. It is the mission of self-sufficiency. *Achieve self-sufficiency* for your poor, hungry, starving, naked countrymen and countrywomen and pray that the Almighty in his bounty may bless your efforts and crown them with success. For, 'More things are wrought by prayer than this world dreams of.'

## Madras Centre

### Chairman's address by Shri A. R. Narayana Rao, B.E., M.I.E., at the 29th Annual General Meeting of the Centre

The Chairman, after welcoming the guests and members, said that the new building of the Centre should serve as a place of pilgrimage for devout engineers. It should not be difficult to visualize a big permanent engineering museum built around this building, where models of dams, irrigation and hydro-electric projects, etc. could be exhibited. They should also have an up-to-date library.



Giving a brief outline of the Madras Electricity Grid, Shri Narayana Rao said, 'The Madras Grid is in existence for the last twenty years. It is a well established public service developing the natural resources in this region. Among the hydro-electric centres are the Pykara, Papanasam and Mettur Stations, and among the thermal are the Madras, Bezwada, Vizagapatam, Nellore and Madura Stations. The total installed capacity in the present running hydro systems excluding the Madras city thermal station is 134,000 kVA, the number of miles of H. T. transmission line is 5,100, and the total number of consumers served is 275,000. It is proposed to double this in the next five years.

The following schemes are already in advanced stages of progress : Machkund, Moyar, Pykara plant extensions, Madras plant extensions, Ceded Districts and Tungabhadra schemes, etc. It has been a noticeable feature that of late the rate of growth of load is so fast that it has overtaken the generating capacities, so that it will be difficult to provide adequate generating capacities in the immediate future, while the reverse was the case about a decade ago. Though Madras leads the rest of

India in rural electrification through electrifying nearly 2,500 villages, we have yet a large leeway to make up.

Decentralization of large industries and development of mechanized cottage industries driven by electricity is the call of the day, and all true mechanically minded engineers should dedicate themselves to the development of necessary equipment which would bring prosperity to our country.

During the last four years I have been personally connected with the nationalization of the Madras Electricity Supply Corporation of the Madras city. This undertaking was run by a private limited company for nearly forty years until August 29, 1947, when the Government took it over. Due to limitations of war and other conditions development was at a standstill. Since taking over, the following progress is recorded. (Figures for August 1947 are given within brackets and figures for November 1951 without brackets.)

Connected load—(44,000 kW), 98,800 kW; installed capacity—(42,000 kW), 47,000 kW with two sets of 15,000 kW under erection.

Generation in units (kWh) per month—(7.7 millions), 10 millions; consumers—(21,526), 38,122.

Coal consumed per month—(6,920 tons), 10,000 tons.

Transmission lines, H. T. and L. T.—(289 miles), 670 miles plus 300 miles sanctioned for construction.

Recently, rural electrification has been taken to suburban areas of the city to an extent of nearly 20 to 30 miles around, giving supplies to villages for agricultural and other small industrial purposes. The capacity of the distribution network was limited to 25,000 kW. As our programme is to increase to around 60,000 kW, and also to re-model the voltages to bring them in line with the latest standards, a superimposed 33 kV and 11 kV network was made on the existing 5 kV system. Madras city is now interconnected with the hydro grid and there is regular interchange of block power through the 110 kV line between Mettur and Madras. Every year, during the last four years, there has been drought in the hydro areas, and Madras has been able to come to the assistance of the hydro systems and contribute substantially during summer, while during the rainy season the surplus of hydro power is absorbed to reduce the coal consumption at Madras. The average daily consumption of coal in Madras comes to about 350 to 400 tons, and most of it comes from the Singareni collieries in Hyderabad and the balance from Bengal.

A large D. C. load has persisted from the beginning to the extent of nearly 10,000 to 12,000 kW. A systematic census of all D. C. equipment was made. A policy is now being evolved to change over these D. C. areas quickly to A. C. A large number of industries are waiting to be served with power and I put in a modest estimate of nearly 25,000 h.p. to be picked up. The present maximum demand is about 28,000 kW but the load factor has recorded a very appreciable rise of about 45 to 75%. This was possible by a detailed system of staggering of loads, industrial and lighting, to yield better utility for the available equipment.

Many of you will be seeing the first 15,000 kW turbo set under erection in the Basin Bridge Power Station on January 1, 1952. The total estimated cost of the 'B' Station extensions covering the installation of two 15 MW sets including the remodelling of the distribution network is around Rs. 6.5 crores. Ultimately the capacity of Madras has to go up to around 100,000 kW.

Madras State is connected with the grid of the neighbouring Mysore State, and there is a possibility of interchange of large blocks of power during favourable seasonal periods with Travancore-Cochin State where big hydro extensions are already in progress.

Other projects which are actively being considered are Kistna—Pennar, Kundah, etc., and these may go to increase the total installed capacity in Madras State to around 500,000 kW when added to Machkund (100,000 kW) and Moyar (35,000 kW) which are already under construction.

With so much electrical development taking place all over, we cannot fail to visualize the establishment of basic heavy electrical industries similar to the locomotive manufacture at Chittaranjan on the mechanical side. Hydraulic turbo sets, steam turbo sets, transformers, switchgear and other electrical equipment and accessories which are in bulk demand in this country but are not manufactured here are a bottleneck to progress. Indian engineering talent, given the equipment and the opportunities, is second to none in the world. It is this development of power and industry that has changed the economy and the face of Japan and certain other industrialized countries. I hope we will also appreciate these potentialities and work to the achievement of the goal.

In this connection I may mention the acute scarcity of trained technical personnel in this country. There is a great paucity of qualified engineers and also qualified technicians. Mere multiplying of our colleges will not meet all the requirements. We also need quality control besides the increase in quantity.'

## Punjab Centre

### Chairman's address by Shri S. S. Kumar, B.Sc. (Hons.), D.I.C., M.Sc. (Eng.), Mem.A.I.E.E., M.I.E.E., M.I.E., at the 8th Annual General Meeting of the Centre on November 11, 1951

The Chairman extended a warm welcome to H.E. the Governor of the Punjab (India) who inaugurated the 8th Annual General Meeting held at Simla.

While thanking the Centre for doing him the honour of asking him to preside over the deliberations and electing him as Chairman for the ensuing year, Shri Kumar said that all efforts to revive the old Punjab Engineering Congress having failed, the Punjab Centre of the Institution was the only forum for the engineers of the State where they could meet and discuss technical problems and disseminate information for the scientific and economic development of the country. He extended an invitation to engineers of the Punjab and the adjoining States of PEPSU and Himachal Pradesh to join the Institution and thereby make the Punjab Centre a strong and representative organization of the engineers. Simultaneously, he hoped that the Punjab State

Government, impressed by their enthusiasm and earnestness, would, in addition to alloting a plot of land at the new capital site at Chandigarh free of cost, also contribute a substantial grant for the erection of a suitable building for the Centre in order to afford the much-needed facility of a meeting place to the young engineers and aspirants who would be the future makers of the Punjab.

While quoting the saying 'Modern civilization rests on the shoulders of the engineers', he said Indians were a poor people in a rich country, and that with the achievement of independence they had to wage a war against hunger, against poverty and against want. The leaders of the country had been convinced that economic freedom was an essential counterpart of political freedom. They had devised ways and means of raising the economic standard through the utilization of the country's large resources. 'That vast natural resources are still available for utilization in the country will be well appreciated from the fact that only 20% of our land is under cultivation, and only 10% of the supplies in our rivers are utilized for irrigation purposes, the rest running waste to the sea.' The Government of India had on hand at present 11 multipurpose projects, 60 irrigation projects, and 64 purely power projects which when completed would cost the Government Rs. 5,900 million. One of these big and major multipurpose schemes was being executed in the Punjab. 'Our engineers had never undertaken a project of this type' said Shri Kumar, 'but if truncated Punjab is to survive, then a project like this had to be completed as early as possible on an economic basis. The construction of the Bhakra—Nangal irrigation and hydro-electric scheme was both a challenge and an opportunity to our engineers for the exercise of their initiative and skill in its planning and construction. I am proud that our engineers have accepted the challenge and seized the opportunities of proving their mettle in performing a notable engineering feat. Construction of Bhakra—Nangal is a proof of what a happy combination of man and machinery can achieve and should be an example to other similar projects in India.'

The Chairman said that the Government had already planned the establishment of new canal colonies and conducted investigations for the possible utilization of electricity which will be generated in different stages. He emphasized the fact that in order to achieve self-sufficiency it was essential for our country to have a balanced economy in which agriculture and industry should progress hand-in-hand.

To attain this object conditions favourable for the use of electric energy must be created. He made a number of suggestions for achieving this object, the foremost being attractive load tariffs for various kinds of industries, agriculture and domestic appliances.

'Power must be utilized for small cottage industries and for that, in the context of the present-day high costs, it will be necessary to cheapen the designs of transmission lines and equipment, even though it may be at the cost of the rigid regulations, in order to spread power over long distances in rural areas where load potentialities are much smaller.'

Regarding the use of electric energy in agriculture, he suggested that proper education of the agricultural population, cooperative farming, consolidation of holdings and demonstration farms were steps in the right direction.

'Let us not forget that it needs approximately four times the finance to utilize power than that required for its generation, transmission and distribution. It is for the Government and the people to find the finance.' He, however, assured that the State Government was alive to these needs and had geared its machinery to face up to this vast problem in all its aspects. He stressed, 'We must develop our other natural resources and keep our rate tariff policy constant for 10 to 15 years to give a proper fillip to the industries', and added that experience had shown that such a policy had paid in the long run.

He reiterated the need for constant and continuous research alongside of such huge projects. He also expressed the necessity of coordinating the effects of our engineers throughout India. Since the States were usually reluctant to spare their engineers, he proposed an All-India Service of Engineers fully equipped and trained in the construction of such projects.

The Chairman eulogized the work done by the Irrigation Branch and the Buildings and Roads Branch of the State in as much as they had directed their efforts in making the Punjab once again 'the granary of India' and creating a dozen new model townships for giving shelter and settling the displaced persons. He also spoke of the progress made in the Electricity Branch and declared that the number of connections had practically doubled since Partition and considerable demand still awaited. Scarcity of material and equipment which had all to be imported was proving a bottleneck, but in spite of this the area of hydro supply had not only been extended by stretching long lengths of half a dozen 33,000 volts lines, but thermal plants had been set up at Panipat and Jagadhri which were acting as pilot stations to the Bhakra—Nangal schemes, and a number of towns had also been electrified thereby. A network of 11 kV lines had been spread to meet the demand of tube-wells and private enterprise. A number of new industrial colonies and new townships had also been electrified. He further disclosed that the work of erection of the new 220,000, 132,000 and 66,000 volts power transmission lines forming part of the Nangal project was being done departmentally unlike most other State Governments, who were letting out such work on contract to specialized line construction companies. While expressing his satisfaction over the Government's decision to build an engineering college at the new capital, he emphasized the necessity of starting additional technical schools for the training of technicians, overseers and draftsmen, as a dearth of such personnel was proving a handicap in the early completion of the projects.

## ANNUAL SUBSCRIPTIONS

Members are reminded that all subscriptions become due on September 1, 1952, for the year 1952-53, and that the rates for the various classes of membership are as follows :

| | |
|---|---|
| Member | Rs. 65 |
| Associate Member | Rs. 50 |
| Companion | Rs. 50 |
| Affiliate Member | Rs. 30 |
| Graduate | Rs. 30 |
| Student | Rs. 20 |
| Subscriber | Rs. 75 |

Members are specially requested to quote both their membership and account numbers when remitting their subscriptions to facilitate speedy allocation and issue of receipts.

## REVISED TABLE OF COMPOSITION FEES

Members will note that in view of the increased rates of subscription under the new Bye-laws which came into force on March 1, 1952, the Table of Composition Fees has since been revised as below.

| Age next birthday | Member | Associate Member |
|---|---|---|
| 26 | | 665 |
| 27 | | 660 |
| 28 | | 654 |
| 29 | | 646 |
| 30 | | 639 |
| 31 | 820 | 630 |
| 32 | 810 | 623 |
| 33 | 798 | 614 |
| 34 | 787 | 604 |
| 35 | 774 | 595 |
| 36 | 759 | 585 |
| 37 | 745 | 573 |
| 38 | 729 | 560 |
| 39 | 712 | 548 |
| 40 | 696 | 535 |

| Age next birthday | Member | Associate Member |
|---|---|---|
| 41 | 676 | 521 |
| 42 | 657 | 505 |
| 43 | 634 | 489 |
| 44 | 612 | 471 |
| 45 | 589 | 453 |
| 46 | 563 | 433 |
| 47 | 534 | 410 |
| 48 | 504 | 388 |
| 49 | 473 | 364 |
| 50 | 439 | 338 |
| 51 | 404 | 310 |
| 52 | 365 | 281 |
| 53 | 324 | 249 |
| 54 | 280 | 215 |
| 55 and over | 231 | 179 |

Note—Members and Associate Members who have attained the age of 55 years or over *and have retired from active duty* may compound their future annual subscriptions at the following rates :

| | |
|---|---|
| For Members .. .. .. | Rs. 200 |
| For Associate Members .. .. .. | Rs. 150 |

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## NOTICE TO (1) EX-STUDENTS WHO LEFT THE INSTITUTION ON ATTAINING 28 YEARS, AND (2) EX-RULE 16(ii) CANDIDATES FOR THE ASSOCIATE MEMBERSHIP EXAMINATION

Attention of members is invited to the following which they are requested to communicate to as many of those concerned as possible, as the persons affected will not receive a copy of this *Bulletin.*

Under Bye-law 11 of the revised Bye-laws which came into force on March 1, 1952, no upper age limit is specified for remaining attached to the Institution as Students, and, consequently, those ex-Students whose names were removed from the rolls on their attaining the age of 28 years under old Bye-law 29 are now eligible to rejoin as Students. Those interested should apply on special forms available for the purpose at the Head Office and at all Local Centres.

Those candidates who have been appearing in the Associate Membership Examination under old Rule 16(ii) of the Rules of the Associate Membership Examination are also now eligible for Studentship and may apply in the forms as above.

Those persons of either category who are yet appearing in the Associate Membership Examination to complete Sections A and B are advised to rejoin or join as Students immediately, as permission to sit for the Examination will only be granted to those who are attached to the Institution as Students.

## BRIEF SUBJECT AND AUTHOR INDEX OF *JOURNAL*, VOL. 32

A brief index of subjects and authors of papers and of other material published in Vol. 32 of the *Journal* is enclosed with the June issue of the *Journal*, which completes Vol. 32.

## INSTITUTION BADGE

Corporate Members who have not so far ordered for an Institution Badge may still do so through the Honorary Secretaries of their Local Centres, giving their membership numbers, on payment of Rs. 5. The steel die for the Badge is being preserved indefinitely by the makers, who will thus be able to supply newly-elected Corporate Members as they require the Badge.

## CORRESPONDENCE AND CHANGE OF ADDRESS

Members are requested to make it a practice to give their membership numbers when writing to the Head Office, and to notify the Secretary of any change of address without delay.

It would also assist to an extent not perhaps realized by members generally if members would give their names in full, typewritten or in block letters, when writing, in order to avoid confusion with other members who may have similar initials. Names in full with account numbers are particularly requested when remitting money in any form—by cheque, by postal order or by money order—to avoid delay in allocating the amounts and in the issue of receipts.

When notifying a change of address, an entirely separate letter should be written for this purpose; the notification should not be included incidentally in any letter dealing with other business.

Cooperation of members in the above respects will avoid unnecessary and wasteful correspondence.

Correspondence addressed to the Secretary should be by designation and not by name, unless, of course, intended to be personal.

## REDUCED RATES FOR PUBLICATIONS OF THE INSTITUTIONS OF CIVIL, MECHANICAL AND ELECTRICAL ENGINEERS, LONDON

In response to enquiries in regard to the subscriptions payable by members of our Institution for the official publications of the three London Institutions, following are the reduced annual (post-free) rates:

*Proceedings of the Institution of Civil Engineers*

Part I—General (6 issues a year), £ 1

Part II—Engineering Divisions, including Airport, Maritime, Railway and Road Engineering (3 issues a year), 10s.

Part III—Engineering Divisions, including Public Health, Structural and Building, and Works Construction Engineering (3 issues a year), 10s.

*Proceedings of the Institution of Mechanical Engineers*

Subscription includes the Main Proceedings (4 issues a year), the P of the Automobile Division (4 issues a year), and the War ] Proceedings (which consists of an irregular number of issues upon the amount of specialized matter to be published), £ 3 5s.

*Proceedings of the Institution of Electrical Engineers*

Part I—General (6 issues a year), 12s. 6d.

Part II—Power Engineering (6 issues a year), 17s. 6d.

Part III—Radio and Communication (6 issues a year), 17s. 6d.

Part IV—Collected Monographs (issued at frequent intervals ar than once a year), 7s. 6d.

All four Parts £2 10s.

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## WORLD PETROLEUM CONGRESS—NEXT (FOURTH) CONGI ITALY IN 1955

The Permanent Council of the World Petroleum Congress recently m Its most important decision was the assignment of the next World Petro gress to Italy. This Fourth Congress will be staged in 1955 and will mo held in Rome. It is the intention that the Congress will open in the last w 1955 and will end in the first week of June.

The procedure of the next Congress was discussed and in general the s 1951 Congress at The Hague will be adhered to, *viz.*, a fully petroleum-te non-political discussion, split up into ten sections. In order to stimulate the submission of papers a programme committee will be formed for each s addition to calling for papers to be submitted individually, these comr invite experts in the various technical fields of the oil industry to write re recent developments in their spheres between 1951 and 1955.

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## INDIAN STANDARDS INSTITUTION PRESS NOTES

The following press notes on standards or draft standards of interest t have recently been issued by the Indian Standards Institution.

### (1) Standard for Boiler Stays

The Indian Standards Institution has just published the standard s for copper rods for boiler stays.

A special type of copper, commercially known as arsenical copper, is i rods for stay bolts of marine and land locomotive boilers, of both fire-tube tube types.

The standard specifies chemical composition of the rods, details of n tolerance on diameter, tests for determining freedom from defects, mecl and retests, and lays down instructions for inspection and marking.

The standard is available on sale at Re. 1 and may be obtained from the Secretary (Administration), Indian Standards Institution.

### (2) Standard for Galvanized Steel Sheets

In order to standardize the manufacture of galvanized steel sheets for Government departments and other users who require sheets of durable quality, the Indian Standards Institution has just published 'Indian Standard Specification for Galvanized Steel Sheets, Plain and Corrugated (Tentative)'.

The specification covers the requirements for the following three classes of sheets produced by the hot process : Class I—Extra heavy coating of zinc (average 2.5 oz./sq. ft.) ; Class II—Heavy coating of zinc (average 2 oz./sq. ft.) ; and Class III—Medium coating of zinc (average 1.5 oz./sq. ft.).

The standard prescribes dimensions and weights for 8 sizes of sheets from 16 to 30 Birmingham Gauge. It lays down other requirements in respect of freedom from defects, galvanizing, tolerance on dimensions, corrugations, tests and retests, and includes instructions on marking, inspection and test certificate.

The standard is available for sale at Rs. 1-4-0 and may be obtained from the Secretary (Administration), Indian Standards Institution.

### (3) Brass Standards

The Indian Standards Institution has recently published two brass standards, one for Naval Brass Rods, Bars and Sections (Tentative), and the other for Brass Ingots and Castings (Tentative).

Brass ingots and castings are commonly used in considerable quantities for various purposes. They contain copper and zinc as their main constituents, and a small percentage of lead for improved machinability, Similarly, brass rods, bars and sections contain these constituents, but in somewhat different proportions and without nickel and aluminium which enter in the composition of the former.

The standard for Brass Ingots and Castings (IS 292-1951) covers the requirements for three grades of brass, and prescribes their chemical composition and tensile properties. Since the country depends for its requirements of tin and nickel mostly on imports, their content has been kept at a minimum, consistent with the desired properties. The addition of nickel, only to improve the mechanical properties, has been discouraged.

The other standard (IS 291-1951) has been prepared chiefly to meet the needs of the Navy, which uses large quantities of this material for marine engineering purposes, in view of its property to better resist corrosion by sea water. Two grades of the material, designated as Grade A and Grade B, have been covered. Grade A material possesses a higher corrosion resistance than Grade B material. The chemical composition and tensile properties of both grades have been prescribed.

In addition, necessary provisions in respect of freedom from defects, sampling, testing, inspection and marking have been included in both standards.

Copies of these standards are available for sale at Re. 1 and may be obtained from the Secretary (Administration), Indian Standards Institution.

### (4) Standard for Domestic Electrical Appliances

A number of electrical appliances for domestic use, such as open-type boiling plates, radiant heaters, immersion heaters and flat irons are now being manufactured in India. While individual specifications dealing with specific requirements of these appliances are separately under preparation, there are a number of general requirements common to all such appliances, and the 'Indian Standard Specification for General Requirements for Electrical Appliances for Domestic Use, IS 302-1951', recently published by the Indian Standards Institution, covers them. It is hoped that this standard will be of considerable assistance to manufacturers, users and those concerned in regulating the quality of manufacture of these appliances.

The standard lays down the general requirements to be fulfilled by electrical appliances and their accessories and fittings designed for use in domestic installations on circuits in which the declared pressure between terminals exceeds 24 volts, but does not exceed 250 volts.

The general requirements prescribed are of materials, workmanship and constructional details in respect of the case or protective cover, moving parts, mechanical strength, terminals, switches on portable appliances, conductor and connecting wires, insulation and earthing facilities. Other items covered are of tests for insulation resistance and high voltage, limits for temperature rise and marking.

Copies of the standard are available on sale at Re. 1 and may be obtained from the Secretary (Administration), Indian Standards Institution.

### (5) Standard for Telephone Wires

The Indian Standards Institution has just published the standard specification for galvanized iron and steel wire for telegraph and telephone purposes. The specification covers three types of galvanized steel wires : (a) 100 lb./mile to 600 lb./mile of two grades, suitable for use as telegraph and telephone wires ; (b) 50 lb./ mile and 75 lb./mile (two sizes) of Grade A for binding and jointing of telegraph and telephone wires; and (c) 600 lb./mile of Grade A, suitable for use as stay wire.

The standard prescribes properties of the two grades separately, in respect of weight per statute mile, diameter, minimum breaking load, maximum resistance per mile, and weight of each coil. The standard also specifies a number of tests to evaluate the prescribed properties and lays down instructions for coiling, labelling, inspection, testing, weighing and sealing.

The standard is available on sale at Rs. 1-4-0 and may be obtained from the Secretary (Administration), Indian Standards Institution.

### (6) Telegraph and Telephone Insulators

The Indian Standards Institution has recently published the 'Indian Standard Specification for Porcelain Insulators for Telegraph and Telephone Lines, IS 283-1951'. The standard has been prepared primarily to meet the requirements of the Indian Posts and Telegraphs Department for porcelain insulators for telegraph and telephone lines. The insulators covered by this standard should also be suitable for telegraph and telephone lines of the Railways and other Government departments. The standard does not cover the insulators required for the communication circuits run solely for the operation and maintenance of electric transmission systems, and in close proximity to such lines.

The standard covers pin-type porcelain insulators for use in supporting telegraph and telephone lines. It prescribes four types of insulators : large, double shed ; small, double shed ; pot-head ; and oil cup, each illustrated by a suitable figure. The acceptance tests comprise : (a) tests for insulation resistance, (b) thermal shock test for homogeneity and uniformity of the insulating material, (c) mechanical test, (d) porosity test, (e) visual inspection, and (f) gauge test.

The standard is available on sale at Rs. 2-4-0 and may be obtained from the Secretary (Administration), Indian Standards Institution.

## BRITISH NATIONAL COMMITTEE, WORLD POWER CONFERENCE—'TECHNICAL DATA ON FUEL'

A copy of the second impression of the fifth edition of 'Technical Data on Fuel', edited by H. M. Spiers and published by the British National Committee of the World Power Conference, has been received by the Institution. The book was first published in 1928 as a British contribution to the Fuel Conference held as a Sectional Meeting of the World Power Conference in London that year ; the present volume replaces the fourth edition published in 1935.

In its present form, 'Technical Data on Fuel' has been completely revised and greatly enlarged. Separate sections deal with general information (including articles on pyrometers, flow of fluids and flow measurement) ; air, water and gases ; specific heat; thermodynamic properties of materials (steam, refrigerants, heat transfer media); thermal conductivity and heat transfer; metals and alloys; refractory materials; fuel—general introduction; gaseous fuels; liquid fuels; solid fuels; stack losses and combustion calculations; and miscellaneous thermal data. A bibliography and an index are also included.

The book is an authoritative compilation by recognised experts in the fuel industry, and the data thus collected together cover a wide range and should be invaluable in connection with fuel problems. Some of the data now included have not been published before and new topics have been added as a result of changing conditions in the fuel industries.

The book should be ordered through the Institution, in its capacity of the Indian National Committee of the World Power Conference, and is priced at 25s. net, (Rs. 18-9-0 post-free). Remittances should accompany the orders.

## GIFT OF BOOKS

The Council acknowledge with grateful thanks a generous gift of books of the late Mr. D. H. Remfry, B.E., M.I.C.E., M.I.E., which has been made to the Library of the Institution by Mrs. Remfry. The following is the list :

Further Problems in the Theory and Design of Structures. Ewart S. Andrews. *Chapman & Hall, Ltd.* (1913)

A Treatise on Masonry Construction. Ira Osborn Baker. *John Wiley & Sons, Inc.* 10th edition. (1914)

Analysis of Elastic Arches of Stone, Masonry and Reinforced Concrete. Joseph W. Balet. *The Engineering News Publishing Co.* (1908)

The Field Practice of Railway Location. Willard Beahan. *The Engineering News Publishing Co.* (1904)

Architectural Iron and Steel, and Its Application in the Construction of Buildings. William H. Birkmire. *John Wiley & Sons.* 3rd edition. (1905)

Skeleton Construction in Buildings. William H. Birkmire. *John Wiley & Sons.* 4th edition. (1905)

Hydraulic Machinery. Robert Gordon Blaine. *E. & F. N. Spon, Ltd.* (1897)

Sewage Disposal in India and the East. George Bransby Williams. *Thacker, Spink & Co.* (1924)

B R C Reinforcements. The British Reinforced Concrete Engineering Co., Ltd., Stafford. 9th edition. (1932)

British Standards for Steel and Steel Products (BS Handbook No. 10). British Standards Institution. 1949 edition.

Reinforced Concrete. A. W. Buel and C. S. Hill. *The Engineering News Publishing Co.* (1904)

The Design and Construction of Metallic Bridges. William H. Burr and Myron S. Falk. *John Wiley & Sons.* (1905)

Notes on Track Construction and Maintenance. W. M. Camp. *W. M. Camp, Chicago.* (1903)

The Design of Typical Steel Railway Bridges. W. Chase Thomson. *The Engineering News Publishing Co.* (1908)

Reinforced Concrete Bridge Design. C. S. Chettoe and Haddon C. Adams. *Chapman & Hall, Ltd.* (1933)

Mechanics of Internal Work. Irving P. Church. *John Wiley & Sons.* (1910)

Concrete Construction in India. The Concrete Association of India, Bombay.

Tables for the Computation of Railway and other Earthwork. C. L. Crandall. *John Wiley & Sons.* 3rd edition. (1902)

Engineering for Masonry Dams. William Pitcher Creager. *John Wiley & Sons, Inc.* (1917)

The Roorkee Manual of Applied Mechanics : Vol. I Direct and Transverse Strain Principally by Analytical Methods. Lt.-Col. Allan Cunningham and Major J. H. C. Harrison. *The Thomason College Press, Roorkee.* (1896)

Engineering Office Systems and Methods. John P. Davies. *McGraw-Hill Book Co., Inc.* (1915)

Detailing and Fabricating Structural Steel. F. W. Dencer. *McGraw-Hill Book Co., Inc.* (1924)

Constructional Steelwork. A. W. Farnsworth. *Charles Griffin & Co., Ltd.* (1905)

Wind Stresses in Buildings. Robins Fleming. *John Wiley & Sons, Inc.* (1930)

The Fireproofing of Steel Buildings. Joseph Kendall Freitag. *John Wiley & Sons.* (1903)

A Study of the Circular-Arc Bow-Girder. A. H. Gibson and E. G. Ritchie. *Constable & Co., Ltd.* (1914)

Practical Acoustics for the Constructor. C. W. Glover. *Chapman & Hall, Ltd.* (1933)

Engineering Failures and Their Lessons. Edward Godfrey. *Edward Godfrey, Pittsburgh, Pa.* (1924)

Secondary Stresses in Bridge Trusses. C. R. Grimm. *John Wiley & Sons.* (1908)

Stresses in Structures and the Accompanying Deformations. A. H. Heller. *John Wiley & Sons.* 2nd edition. (1908)

Reinforced Concrete Construction: Vol. II Retaining Walls and Buildings (1913); Vol. III Bridges and Culverts (1916). George A. Hool. *McGraw-Hill Book Co., Inc.*

Foundations, Abutments and Footings. George A. Hool and W. S. Kinne (Editors-in-Chief). *McGraw-Hill Book Co., Inc.* (1923)

Movable and Long-Span Steel Bridges. George A. Hool and W. S. Kinne (Editors-in-Chief). *McGraw-Hill Book Co., Inc.* (1923)

Structural Members and Connections. George A. Hool and W. S. Kinne (Editors-in-Chief). *McGraw-Hill Book Co., Inc.* (1923)

Symmetrical Masonry Arches. Malverd A. Howe. *John Wiley & Sons.* (1906)

Structural Engineering. Joseph Husband and William Harby. *Longmans, Green & Co.* 4th edition. (1934)

Structural Design of Earthquake-Resistant Buildings. S. Irwin Crookes. *Leightons Ltd., Auckland, New Zealand.* (1940)

Economy in Bridge Design and Construction. H. W. Joyce. *Bengal Secretariat Book Depot, Calcutta.* (1915)

The Design of Steel Mill Buildings. Milo S. Ketchum. *McGraw-Hill Book Co.* 3rd edition. (1912)

Reinforced Concrete Arch Design. G. P. Manning. *Sir Isaac Pitman & Sons, Ltd.* (1933)

The Roorkee Treatise on Civil Engineering in India: Vol. II. Major J. G. Medley. *The Thomason College Press, Roorkee.* (1867)

Mechanics of Materials. Mansfield Merriman. *John Wiley & Sons, Inc.* 11th edition. (1914)

A Text-book on Roofs and Bridges: Part III Bridge Design. Mansfield Merriman and Henry S. Jacoby. *John Wiley & Sons.* 4th edition. (1903)

American Civil Engineers' Handbook. Thaddeus Merriman (Editor-in-Chief). *John Wiley & Sons, Inc.* 5th edition. (1930)

Materials of Construction as Used in India. Nagendra Nath Mitra. *Thacker, Spink & Co.* (1924)

Building Structures in Earthquake Countries. Ing. Alfredo Montel. *Charles Griffin & Co., Ltd.* (1912)

Notes on Cylinder Bridge Piers and the Well System of Foundations. John Newman. *E. & F. N. Spon.* (1893)

A Practical Treatise on Foundations. W. M. Patton. *John Wiley & Sons.* 2nd edition. (1906)

Practical Examples of Reinforced Concrete Design. Chas. E. Reynolds. *Concrete Publications Ltd.* (1938)

Reinforced Concrete Bridges. Frederick Rings. *Constable & Co. Ltd.* (1913)

Competitive Design of Steel Structures. Peter Russell and George Dowell. *Chapman & Hall, Ltd.* (1933)

Reinforced Concrete Bridges. W. L. Scott. *Crosby Lockwood & Son.* (1925)

Explanatory Handbook on the Code of Practice for Reinforced Concrete. W. L. Scott and W. H. Glanville. *Concrete Publications Ltd.* (1934)

Foundations. William Simpson. *Constable & Co. Ltd.* (1928)

Steel Construction and Broad Flange Beams, Grey Process (Handbook No. 22). R. A. Skelton & Co., London. 4th edition. (1948)

Types and Details of Bridge Construction: Part I Arch Spans (1904); Part II Plate Girders (1906); Part III Specifications and Standards for Short Railroad Spans (1908). Frank W. Skinner. *McGraw Publishing Co.*

Masonry Structures. Frederick P. Spalding. *John Wiley & Sons, Inc.* (1921)

Indian Storage Reservoirs with Earthen Dams. William Lumisden Strange. *E. & F. N. Spon, Ltd.* 2nd edition. (1913)

A Treatise on Concrete, Plain and Reinforced. Frederick W. Taylor and Sanford E. Thompson. *John Wiley & Sons.* (1905)

Principles of Reinforced Concrete Construction. F. E. Turneaure and E. R. Maurer. *John Wiley & Sons.* (1907)

Bridge Engineering: Vol. I. J. A. L. Waddell. *John Wiley & Sons, Inc.* (1916)

Economics of Bridgework. J. A. L. Waddell. *John Wiley & Sons, Inc.* (1921)

The Design and Construction of Dams. Edward Wegmann. *John Wiley & Sons.* 6th edition. (1911)

Reinforced Concrete Piling. F. E. Wentworth-Shields and W. S. Gray. *Concrete Publications Ltd.* (1938)

Mechanical Equipment of Buildings: Vol. I Heating and Ventilation (1916); Vol. II Power Plants and Refrigeration (1918). Louis Allen Harding and Arthur Cutts Willard. *John Wiley & Sons, Inc.*

The Engineer's and Mechanic's Encyclopædia: Vol. II. Luke Herbert. *Thomas Kelly.* (1887)

The Planning, Erection and Operation of Modern Open Hearth Steel Works. Hubert Hermanns. *Ernest Benn Ltd.* (1924)

Blast Furnace Construction in America. J. E. Johnson. *McGraw-Hill Book Co., Inc.* (1917)

Power Distribution for Electric Railroads. Louis Bell. *Street Railway Publishing Co., New York.* 3rd edition. (1900)

Hydro-Electric Developments and Engineering. Frank Koester. *D. Van Nostrand Co.* 3rd edition. (1915)

Starters and Regulators for Electric Motors and Generators. Rudolf Krause. *Harper & Brothers.* (1904)

Hydro-Electric Power: Vol. I Hydraulic Development and Equipment; Vol. II Electrical Equipment and Transmission. Lamar Lyndon. *McGraw-Hill Book Co., Inc.* (1916)

Mrs. Remfry's gift also included some bound volumes of *Concrete and Constructional Engineering, The Concrete Institute Transactions and Notes, Engineering News Record, Proceedings of the American Society of Civil Engineers,* and *The Structural Engineer.*

The Council also thank the Federation of British Industries for a copy of the 24th edition of 'F B I Register of British Manufacturers 1951-52'. The Federation, founded in 1916, represents the whole field of productive industry in the United Kingdom, and was granted a Royal Charter of Incorporation in 1924. The Register gives the aims and activities of the Federation, the products, services and addresses of its member firms which total some 6,400, and other items of trade information.

## ADDRESSES WANTED

The mail of the following Students have been returned undelivered. Will any members in a position to assist the Office with their present addresses please do so ?

| Name | Address |
|---|---|
| Ali, Hamid | C/o Mohd. Ali, Tailoring Shop, Thomsonganj, Sitapur, U.P. |
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| Chatterjee, Mongolmoy | Sectional Officer, P.W.D. (Boke Sub-Division), P.O. Gauhati, Assam. |
| Cherian, K. P. | B. E. IV Year Civil, 48, New Extensions, University Hostel, Annamalainagar, S. I. Rly. |
| Chopra, Harkishan Lal | Overseer, Adampur Doaba, Dist. Jullundur, East Punjab. |
| Chugh, Ghanisham Dass | C/o Malik Soap Factory, Clock Tower, Subzimundi, Delhi. |
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| Dhar, Dipti Roy | 100, Colvin Road, Ondal, E. I. Rly. |
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| Dusaje, Rai Indernath | C/o Lt. R. D. D. Dusaje, Area Land Headquarters and Disposals Officer, 16, Smith Road, Mount Road P.O., Madras 2. |
| Garapaty, S. R. S. | C/o N. Ramaseshayya Garu, Manager, Jeysu Co., Rayagada, B. N. Rly., Orissa. |
| Goel, S. C. | Overseer, P.W.D., Central Town, Hastinapur, Dist. Meerut, U.P. |
| Gupta, Sadhu Ram | C/o L. Naranya Lal, Contractor, Mohalla Ganj, Meerut Cantt. |
| Halder, Manas Ranjan | 1, Deshapriya Park East, Calcutta 29. |
| Halder, Narendra Kishore | Eden Garden Hostel, Calcutta 1. |
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| Khan, Ahtesham Ali | C/o K. S. Khurshed Ali Khan, S.D.O. Canals, P.O. Haldwani, Dist. Nainital. |
| Kundra, Om Prakash | Canal Colony, Ferozepur, East Punjab. |

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| Meenakshisundaram, R. | 13, Desigar Swamy Street, Mylapore, Madras 4. |
| Mukherjee, Salil Kumar | C/o Rajgaon Stone Co. Ltd., P.O. Pakur, Dist. Santhal Parganas. |
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| Paul, Jacob P. | Palachiracal, Kumbathittayil, Thazhakara, Mavelikara P.O., Travancore. |
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| Sarna, K. K. | Chargeman, Wheel Shop, Jamalpur Works, E. I. Rly., Bihar. |
| Sheikh, Ahmed Husain | C/o A. H. Nadir, Chief Probation Office, Old Post Office Building, Nazratganj, Lucknow. |
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| Singh, M. G. | Overseer, P.W.D., Dharamjaygarh, Dist. Raigarh, *via* Kharsia, B. N. Rly. |
| Sivaraman, T. S. | E4 Civil Student, Room No. 34, New Extensions, University Hostel, Annamalainagar, S. I. Rly. |
| Sodera, Harbans Singh | C/o Pandit Kashi Ram, 'Amba Bhawan', Kasauli. |
| Srinivasacharlu, P. | F Block, Room No. 231, Engineering College, Madras 15. |

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| Verma, Satinder Lal | .. | C/o L. Kundan Lal Verma, S D.O., 187, Session Court Road, Jullundur City, East Punjab. |
| Vittal, N. P R. | .. | 873, Chamundipuram, Mysore City. |
| Vyas, Shree Shankar | .. | Apprentice Engineer, Sohwal Power House, P.O. Raunahi, Dist. Fyzabad, U.P |

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## OBITUARY

### Sir Ness Wadia

Sir Ness Wadia, K.B.E., C.I.E., J.P., M.I.Mech.E., M.I.Struct.E., F.C.P.S.I. (Hon.), M.I.E., died on April 22, 1952, at Bombay at the age of 79. Sir Ness was the second son of Mr. Nowrosjee Wadia, the pioneer of the hosiery and sewing thread manufacture in India, and was born in 1873.

Leaving school in 1890, he joined his father's firm of Nowrosjee Wadia and Sons, and received early in his life the thorough knowledge of the textile industry of which he was later to become one of the leaders. Five years later he was taken as a partner in the firm. After the death of his father in 1899 and the retirement of his elder brother, the late Sir Cusrow Wadia, in 1905, Sir Ness assumed charge of the firm, which had already the agencies of many famous overseas textile machinists, and which also acted as agents for the Bombay Dyeing and Manufacturing Co., Ltd , employing 8,000 men and of which Sir Ness was Chairman.

Sir Ness became a member of the Bombay Millowners Association in 1899, and was elected its Chairman in 1911. During his term of office, he devoted himself to the cultivation of better quality cotton in the country, and, at the annual meeting of the Association for that year. he emphasized for the first time in its history the need for unified action in the country for the benefit of the industry as a whole. Sir Ness was again Chairman of the Association in 1925, at a time of severe depression and competition from Japan. Thanks to the efforts of Sir Ness, a special Textile Tariff Board was appointed for the first time by the Government of India, and, after Sir Ness had led a delegation to see Lord Reading, the then Viceroy, the situation was relieved by the suspension of the Cotton Excise Duty.

The depression years of 1929-30 again found Sir Ness working hard for more unification in the industry. At the time of his death, he was recognized as the most accomplished authority in textile industry in the country, not only because of his vast technical knowledge and experience, but also on account of his labours to raise the living conditions of the workers in the industry.

When the Cotton Control Board was established in 1943 by the Government of India, Sir Ness not only aided in its formation but was himself responsible for framing the policy of equitable distribution of yarn and cloth. He was Chairman of the Yarn Panel for some years.

No better example of Sir Ness's interest in the welfare of the workers can be given than the endowment of Rs. 21 lakhs he jointly made with the late Sir Cusrow Wadia for the Nowrosjee Wadia Maternity Hospital at Parel, Bombay. Two years later the brothers made another endowment of Rs. 25 lakhs for the Bai Jerbai Wadia Hospital for Children, named after their mother. Besides these two magnificent endowments, Sir Ness and his family sponsored and built four large housing schemes in Bombay for poor and middle class Parsis at a cost of Rs. 1½ crores.

Sir Ness joined the Institution as a full Member in 1922 and had thus been associated with its activities for thirty years at the time of his death.

17-7-53

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